



AN INTERPRETATION OF RUMPHIUS'S HERBARIUM AMBOINENSE

BY

E. D. MERRILL



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DEDICATED TO THE MEMORY

OF

CHARLES BUDD ROBINSON, Jr.

Pictou, Nova Scotia, October 26, 1871

† Amboina, December 5, 1913



CONTENTS

	Page
ILLUSTRATIONS	
Preface	:
Introduction	1:
The importance of the Herbarium Amboinense	11
Rumphius and his work	18
Amboina	18
The genesis of the plan and the botanical exploration of Amboina	20
Errors in the interpretation of Rumphian species	2'
The interpretation of Rumphian species as types	29
The interpretation of the species described in the Herbarium	
Amboinense by various authors	3
Linnaeus and Stickman	3
Burman	3
Buchanan-Hamilton	3
Henschel	3
Hasskarl	3
The present status of Rumphian species	38
Difficulties in interpreting Rumphian species	4
Nomenclature	4
Overlooked binomials	4
Acknowledgments	5
Systematic Enumeration	5
Thallophyta	5
Pteridophyta	6
Spermatophyta	7
Gymnospermae	7
Angiospermae	79
Monocotyledonae	79
Dicotyledonae	179
Species described or mentioned by Rumphius that cannot be	
definitely referred to their proper families	504
SEQUENCE OF SPECIES IN RUMPHIUS'S HERBARIUM AMBOINENSE WITH	50.
	21.
THEIR BINOMIAL EQUIVALENTS	51:
ADDENDA	549
INDEX	55:

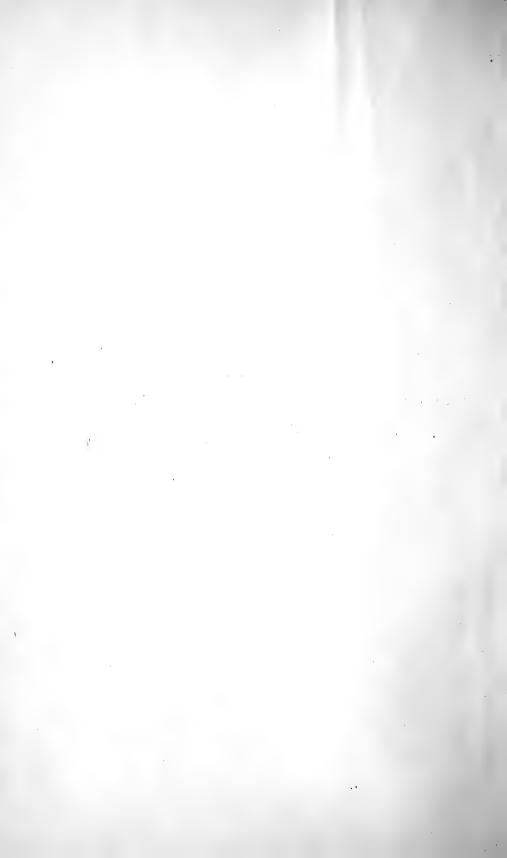


ILLUSTRATIONS

PLATE I. Map, showing Amboina and the surrounding islands.

II. Map of Amboina.

TEXT FIGURE 1. Form of field label.



PREFACE

It was with considerable diffidence and great regret that I assumed the task of interpreting the species described in the Herbarium Amboinense, as it was at my suggestion that Doctor Robinson undertook this task, in the prosecution of which he met his untimely death.

Doctor Robinson arrived in Amboina July 15, 1913, and immediately commenced his field work, which was actively prosecuted up to the time of his death. On the morning of December 5, 1913, he departed from the town of Amboina, unaccompanied, for a botanical excursion through the country south of the town, passing through Amahoesoe, Eri, Silalei, Latoelahat, and Aerlo. While on his return trip he was murdered by the Boetonese residents of a small settlement between Aerlo and Seri, about 15 kilometers from the town of Amboina. The crime was wholly due to a local superstition, the ignorant natives mistaking Doctor Robinson for the notorious potong kapala (the decapitator), who is currently believed to wander about during November and December for the purpose of cutting off human heads.*

When Doctor Robinson left Manila for Amboina in June, 1913, he fully expected to complete the task of interpreting the species described in the Herbarium Amboinense, but he lived to finish only a part of the necessary field work. His unforeseen death, while he was actively prosecuting his field work, placed an entirely different aspect on the problem, and in order that his untimely death might not have been in vain, I felt constrained to take up the task, at the point where Doctor Robinson's labors were ended, and to carry the project to completion, so far as this could be done from the material and data available.

The qualifications necessary to obtain the best results in this special field are exacting. A wide knowledge of the Malayan flora is essential, as is a thorough understanding of Latin, of Dutch, and of the native names of plants in the Malay Archipelago, qualifications to which I can lay claim only to a limited

^{*} Merrill, E. D. Charles Budd Robinson, Jr. Philip. Journ. Sci. 9 (1914) Bot. 191-197.

degree. Under the circumstances the future investigator will doubtless find in the present work errors both of omission and of commission. Much remains to be done before all the species that are typified by the Rumphian descriptions are thoroughly understood, but a great part of this work will depend on a continued and comprehensive botanical exploration of Amboina and of the neighboring islands with special attention to this object.

The actual working up of the results could best have been done at one of the large European botanical institutions, where access could be had to large libraries, to comprehensive collections of botanical material from all parts of the world, and to type and authentically named specimens, as well as the opportunity of consulting specialists in various groups. As a trip to Europe was impracticable, the work was done in Manila, utilizing the local library and herbarium.

In the prosecution of the task I have been obliged to interpret numerous species from their published descriptions, as herbarium material representing them was not available in Manila. wise, there are a number of botanical works containing references to the Herbarium Amboinense that I have been unable to consult, as no copies of these were to be had in Manila. difficulty has been overcome in part by borrowing certain essential works, and in part by sending to various botanical institutions for copies of original descriptions, which have generously been supplied by botanists in the United States and in In general, while it is realized that the present interpretation of the species described in the Herbarium Amboinense is incomplete and imperfect, it is also realized that completeness and perfection in this difficult task are relative terms and that many of the species that I have been obliged to enumerate as of more or less doubtful status could not have been more definitely placed, even if I had had access to all of the botanical literature and an opportunity to examine all of the extant botanical material from the Indo-Malayan region. It is felt, however, that the present treatment of the Rumphian species meets a real requirement and that, to a very large degree, it will clear the way for the more intensive study of the problems in connection with each individual species of doubtful status.

E. D. MERRILL.

INTRODUCTION

THE IMPORTANCE OF THE HERBARIUM AMBOINENSE

The Herbarium Amboinense consists of twelve books, published in six volumes. The purpose of each book is expressly stated, thus:

Liber primus. Qui continet arbores, quae fructus esculentos ferunt, ac culturam humanam requirunt.

Liber secundus. Continens arbores aromaticus, quae aut fructum aromaticum, corticemve, aut odoratum aliquod praebent lignum.

Liber tertius. Continens arbores, quae Resinam, speciososque dant Flores, aut noxium aliquod lac fundunt.

Liber quartus. Arbores continens silvestres, quarum pars aliqua fabrilis est.

Liber quintus. De Arboribus agens silvestribus promisque.

Liber sextus. De fruticibus agens tam domesticis, quam silvestribus. Liber septimus. De funibus agens silvestribus & Fruticibus reptantibus.

Liber octavus. De plantis agens domesticis, tam victui, quam Medicinae, & decori inservientibus.

Liber nonus. De Convolvulis, & Herbis reptantibus.

Liber decimus. De Herbis agens silvestribus promiscue.

Liber undecimus. Agens de reliquis herbis silvestribus.

Liber duodecimus. De arbusculis agens marinis, & plantis saxosis, seu de Lithodendris & Lithophytis.

To the above should be added the "Auctuarium," cited in this work as volume seven of the Herbarium Amboinense, which contains additional notes on species described in the above twelve books as well as figures and descriptions of plants not included in them.

The classification is primarily the ancient one of trees, shrubs, and herbs, with subdivisions according to habitats and uses. There is no system based on other than the most evident, gross characters. While the purpose of each book is definitely indicated, it is important to understand the object of the work as a whole. Rumphius expressly states that it was based, not on Amboina alone, but on all of the Dutch East Indies. However, as the work was done on plants or parts of plants either growing in Amboina, sent to him from other regions, or brought in from other countries for commercial purposes, he selected the title Herbarium Amboinense. Numerous species now growing

in Amboina are not described in the Herbarium Amboinense, for Robinson's collection alone presents more than 350 species of ferns and flowering plants not considered by Rumphius.* Some of these have undoubtedly been introduced into Amboina since Rumphius's time, but very many of them are indigenous and were certainly as common there in the seventeenth century as they are to-day. Some of the species not appearing in the Herbarium Amboinense are small and might have been ignored as being of slight importance; but others are large trees, shrubs, or vines, often with rather showy flowers, and in many cases they are abundant. Doctor Robinson's final conclusions as to the methods used by Rumphius in selecting the species described are expressed in a letter written early in November, 1913, as follows:

I think more and more that the Herbarium Amboinense was not at all a complete flora of Amboina as Rumphius found it and that he selected on four bases: Economic plants and others that resembled them; plants that were very different from those he had seen in Europe; plants that greatly resembled those of Europe; plants regarding which there was some superstition or legend. A fifth heading might be made for the very showy plants, but I think that this really belongs under the second group.

The Herbarium Amboinense is a classical work on the Malayan flora, and one that is absolutely essential to the systematist to-day. This is not because of any system of classification proposed, for the work follows no definite system, nor on account of priority of its names, as the work is pre-Linnean, and binomial names appearing in the text are merely accidental. importance of the work is due to the fact that later authors have made the Rumphian descriptions and figures the actual "types" of many binomials. As an original source the Herbarium Amboinense stands preëminent among all the early publications on Malayan botany. In more than 800 original "publications" of species of plants under the binomial system from 1753 to 1908 the Rumphian names or figures, or both, are quoted as synonyms, and in about 350 cases the proposed binomials are based wholly on data given by Rumphius. In no case is a species typified by Rumphian figures and descriptions intelligible without reference to the Herbarium Amboinense. merous species not represented by any "type" specimens must, of course, be interpreted primarily by the data given by Rumphius, supplemented by a study of botanical specimens from the same

^{*} Merrill, E. D. Reliquiae Robinsonianae. *Philip. Journ. Sci.* 11 (1916) *Bot.* 243-319.

general region from which Rumphius secured his material. In spite of what has been accomplished in the past hundred years on the Moluccan flora and the intensive field work prosecuted in Amboina for four and one-half months by Doctor Robinson, numerous species typified by Rumphius's descriptions and figures are still of doubtful status and must so remain, until in each case they are definitely connected with botanical material originating in the classical locality for each species and agreeing with the descriptions and figures, the native names, the economic uses, and the other characters indicated by Rumphius.

The work already prosecuted in Amboina and the neighboring islands has yielded material by which the essential characters of very many of the Rumphian species can be definitely determined, but much remains to be done in this field. In botanical literature there are scores of species whose only published descriptions are the brief general statements compiled from the Herbarium Amboinense, from which data alone it is usually impossible for the working systematist to gain any definite idea of the true characters of the species. This is especially true in such critical genera as Calamus, Elaeocarpus, Citrus, Bambusa, Canarium, and in many others. Botanists generally have been content to work on the Malayan flora, describing as new the various forms that have appeared in current collections, without making any serious attempt to determine the exact status of species in the same groups based on Rumphian descriptions. Stability in nomenclature demands that the status of these early species be determined as soon as possible, for otherwise many reductions must be eventually made.

The Herbarium Amboinense was very extensively cited by Linnaeus's contemporaries and successors, especially by Burman f., Loureiro, and others, who wrote on the floras of regions geographically allied to Amboina, and by all authors of general works on systematic botany up to the middle of the nineteenth century. In the more recent works on systematic botany the Herbarium Amboinense is not so frequently quoted as in older ones, references to this work being to a large degree those necessary to explain synonymy. However, binomials based wholly on the Rumphian descriptions and figures continue to be proposed, the latest ones observed being Sindora galedupa Prain, 1897, and Calamus acidus Beccari, 1906.

It is by no means certain that the importance of the Herbarium Amboinense is fully appreciated. The number and the size of the volumes, seven, folio; the number of printed pages,

over 1,660; and the number of plates, about 695, give but an inadequate idea of the immense amount of data contained Rumphius described in greater or less detail and in this work. named about 1.700 forms. His descriptions, while sometimes scarcely more than casual mention, are more often very ample, and to these are often appended discussions of the economic uses of the various plants described. Few works on Indo-Malayan botany, published since the Herbarium Amboinense was written. can compare with it in amount and variety of original data. When it is fully realized that practically all of the immense mass of data included in the Herbarium Amboinense represents the observations and accumulated knowledge of one man, the great energy and ability displayed by Rumphius in preparing this monumental work, which was accomplished under very adverse circumstances, can be more fully appreciated.

The work is immensely more than a discussion of the plants of Amboina. While it is true that most of the descriptions and the greater part of the figures were based on Amboina specimens, copious references are found to other regions, extending from Madagascar to China and Japan, southeast to New Guinea, and even to Mexico and South America. It is very evident that Rumphius's colleagues and correspondents transmitted material to him from the whole Orient, and he incorporated his descriptions of this material in the Herbarium Amboinense.

Among Doctor Robinson's papers were found the following compiled data, which will give some definite idea of the regions covered by the work. The most important references to Java comprise 125 entries; to Celebes, 83; to Ceram, 77; to Bali, 74; to Banda, 53; to Buru, 42; to the Moluccas proper, including Ternate, Tidore, Batchian, and Halmaheira or Gilolo, 58; to the Philippines, 20; to Boeton, 12; to Borneo, 8; to Sumatra, 8; to Madura, 4; to Manipa, 15; to the Sumbawa-Timor group, including Sumbawa, Timor, Nussa Radja, Solor, Wetter, and Rottea, 23; to the Aru Islands, 6; to the Key Islands, 3; to New Guinea, 4; to the Sula Islands, 8; and to the small islands near Amboina, 8. There are numerous references to China, but fewer to Japan, Indo-China, Malacca, Madagascar, southern Africa, Mexico, Peru, and Brazil. A number of the species figured and supplied with ample descriptions were based on this extra-Amboina material, although others are only casually mentioned. It is at once evident that by no means all the Rumphian species can be interpreted from Amboina material and data alone.

RUMPHIUS AND HIS WORK

George Everhard Rumphius, as the family name Rumpf or Rumph is Latinized, well named "the Pliny of the Indies," was born in 1627, apparently in Hanau, Hesse Cassel, Germany, and died in Amboina, June 15, 1702, at the age of 75 years. Detailed accounts of his life and work are available in the writings of numerous authors* so that it is unnecessary to enumerate here more than the most important facts in connection with the preparation and publication of his most renowned work, the Herbarium Amboinense.

Rumphius entered the service of the Dutch East India Company as a young man, proceeded to Batavia, Java, in 1653, and in the latter part of the same year to Amboina, where he resided for the remainder of his life. Perhaps for the first two years of his stay in Amboina he was stationed at Larike, but later he was transferred to Hila. It is evident that he commenced the preparation of the Herbarium Amboinense shortly after his arrival in Amboina, his active work being continued practically until his death, in spite of the great handicap of blindness after the year 1670. In 1670, while still stationed at Hila, he had the work about completed, and it was then his intention to return to Europe. To make a more definite study and comparison of all his species, he undertook a final series of journeys along the coasts and in the hills, and to this he himself attributes his blindness which followed almost at once. His published works are manifestly based largely on observations made by him between 1653 and 1670. The handicap of blindness was somewhat lessened by aid given him by his wife and by assistants assigned to him by the Dutch East India Company. In 1673 he removed to the town of Amboina and commenced to translate the original Latin text of the Herbarium Amboinense into Dutch. In the following year, however, his wife and eldest child were killed in the great earthquake of that year, and subsequent to that date he had less other assistance, some of it of little real value. The original illustrations for the Herbarium Amboinense were apparently made by Rumphius himself, but on January 11, 1687, Amboina was visited by a disastrous fire, in which Rumphius's house was destroyed, including his library, many of his manuscripts, and the plates of the Herbarium Am-

^{*} See Rouffaer and Muller "Biographiën van Rumphius" in their: Eerste proeve van een Rumphius-Bibliographie. Rumphius Gedenkboek 1702–1902 (1902) 176–185.

boinense. Undaunted by this last catastrophe, he replaced the destroyed illustrations by new drawings, some made by his son, P. A. Rumphius, others made by various assistants supplied by the East India Company. Thus in attempting to interpret Rumphian species the fact must be constantly kept in mind that the illustrations were not made from the actual specimens on which the corresponding descriptions were based. In this connection I venture to give the following translation of Rumphius's own statement:*

The plates were drawn by various artists, some of the figures larger, some smaller, but each marked with its name, which I myself never saw [italics mine]; but I have learned from the skilled, and am informed that they sufficiently agree with the plants themselves, but what ought sometimes to be changed I have marked on the plates themselves or in the text. However, the reader may take these as sufficiently faithful and pleasing, while perchance they may be corrected by others, or better ones produced, for he will readily perceive that in this country I have not been provided with the best artists, for which reason also I have not been ashamed to refer him to other works with larger and better plates, especially Rheede, which has recently been published.

This passage explains much in connection with the Herbarium Amboinense, such as the very crude execution of some figures and the excellent reproduction of others; the union, in a few cases, of the characters of totally different species on a single drawing such as *Pemphis* and *Aegiceras*, and *Urena* and *Triumfetta*; the fact that certain drawings do not conform to the characters given in the description that they are supposed to represent; the absence of drawings to illustrate species that are fully described; why certain species, certainly as common in Amboina in Rumphius's time as they are to-day, are not mentioned in the work; and perhaps the rather striking discrepancies in the magnifications or reductions of parts of various species so evident on many of the drawings.

In 1690 the manuscript of the first six books was delivered to the Dutch East India Company, the remaining parts being delivered in 1695. The manuscript of the first six books was forwarded to Holland from Batavia, Java, in 1692 on the Waterland. This ship was destroyed by the French in transit, and the manuscript was lost with the ship. Fortunately a copy had been retained, and thus the fruit of Rumphius's many years of labor was not lost. A copy of these six books was finally sent to Holland in 1696, the manuscript of the remaining six books was

^{*} Herb. Amb. 1 (1741) author's preface, last page.

sent the following year. The manuscript of the "Auctuarium," completed by Rumphius in 1701, a few months before his death, was copied at Batavia and sent to Holland in 1704. This important manuscript remained in the archives of the Dutch East India Company until 1736, when the company granted permission to Professor J. Burman to prepare it for printing, the six volumes appearing between 1741 and 1750 and volume seven, the "Auctuarium," in 1755.

The general title of the published work, taken from volume three, is as follows:

Georgii Everhardi Rumphii, | Med. Doct. Hanavensis, Mercatoris Senioris, & in Amboina Consulis, nomine | Plinii Indici celebris, & Membri Inlustris Societatis Aca- | demiae Naturae Curiosum Germaniae, | Herbarium | Amboinense, | Plurimas complectens Arbores, Frutices, Herbas, Plantas terrestres & aquaticas, | quae in Amboina, | et ajdacentibus reperiuntur insulis, | Adcuratissime descriptas juxa earum formas, cum diversis denominationibus, | cultura, usu, ac virtutibus. | Quod & insuper exhibit | varia insectorum animaliumque genera, | Plurima cum naturalibus eorum figuris depicta. | Omnia magno labore ac studio multos per annos conlecta, | & duodecem conscripta libris. | Nunc primum in lucem edita, & in Latinum sermonem versa, | Cura & Studio | Joannis Burmanni, | Med. Doct. et in Horto Medico Amstelaedamensi Professoris | Botanici, Academiae Caesareae Naturae Curiosum Socii; | Qui varia adjecit Synonyma, suasque Observationes.*

Volume seven, the Auctuarium, issued five years after volume six was printed, bears the following title page:

Georgii Everhardi Rumphii | * * * | Herbarii | Amboinensis | Auctuarium, | Reliquas complectens Arbores, Frutices, ac Plantas, | quae in Amboina, et adjacentibus demum repertae sunt insulis, | Omnes accuratissime descriptae, & delineatae juxta earum | formas, cum diversis Indicis denominationibus, | cultura, usu, ac viribus; | Nunc primum in lucem editum, & in Latine sermonem versum, | Cura & Studio | Joannis Burmanni | * * * | Qui varia adjecit Synonyma, suasque Observationes.†

In the present paper the Auctuarium has been consistently cited as volume seven of the Herbarium Amboinense.

While Rumphius's fame rests largely on the Herbarium Amboinense, this by no means represents all that he accomplished.

^{*1 (1741) 1-200,} t. I-82, preface, introduction, etc.; 2 (1741) 1-270, t. I-87; 3 (1743) 1-218, t. I-141; 4 (1743) 1-154, t. I-82; 5 (1847) 1-492, t. I-184; 6 (1750) 1-256, t. I-90. The title page varies somewhat in the different volumes and between editions one and two, a second edition, not essentially different from the first, having been issued in 1750. The Dutch title page is not here repeated.

^{†(1755) 1-74,} t. 1-29, Index Universalis [1-20]. The Dutch title page is not here repeated.

His Rariteitkamer * is in itself a remarkable book, in which are figured and described numerous crustaceans, echinoderms, starfishes, several hundred mollusks, both univalves and bivalves. crystals, fossils, and other forms. This work passed through several editions, and the figures are in general distinctly better than those in the Herbarium Amboinense. His Amboinische Historie and Amboinische Land-Beschrijving still remain in manuscript. His Amboinische Dierboek was planned, according to Leupe, to consist of three books, in which the birds, the land animals, and the marine animals were to be described and figured, this to supply for the animal kingdom what the Kruidboek (that is, the Herbarium Amboinense) did for the plant kingdom. This work, however, was never published as such, although Valentijn apparently utilized much of Rumphius's data, perhaps not always acknowledging its source. His manuscript reports on the agriculture of Amboina, on the fortifications of Castle Victoria, description of the Amboina earthquake, a Malay dictionary, and other writings are still extant. Rumphius's activities as an investigator other than as a student of plants are here briefly mentioned merely to emphasize the ability, energy, and broad interest of the man, for his record as an investigator is a most remarkable one, more especially so when we take into consideration the period in which he lived and worked and the great handicaps under which he struggled.

AMBOINA

Amboina, Amboyna, or Ambon, as the name is variously spelled, is a small island situated about 128° east and 4° 40′ south, a short distance south of the western end of Ceram on the north side of Banda Sea and not far from the western end of New Guinea. In the history of Malayan botany it is of preëminent importance, as it is the type locality of several hundred species, many of which were very imperfectly character-

^{*} D' Amboinsche | Rariteitkamer, | Behelzende eene beschryvinge van allerhande | zoo weeke als harde | Schaalvisschen, | te weeten raare | Krabben, Kreeften, | en diergelyke Zeedieren, | als mede allerhande | Hoorntjes en Schulpen, | die men in d' Amboinsche Zee vindt: | Daar benevens zommige | Mineraalen, Gesteenten, | en soorten van Aarde, die in d' Amboinsche, en zom- | mige omleggende Eilenden govonden worden. | Verdeelt in drie Boeken, | En met nodige Printverbeeldingen, alle naar 't leven getekent, voorzien. | Beschreven door | Georgius Everhardus Rumphius, | van Hanauw, Koopman en Raad in Amboina, mitsgaders Lid van het Kyzerlyke kweekschool der | onderzookers van de Natuurkuunde in 't Duitsche Roomsche Ryk opgerecht onder den naam van | Plinius Indicus | (1705) XXVIII+1-340 [43], t. 1-60.

ized by the early authors. From a botanical standpoint it owes its great importance almost wholly to the preparation and publication of Rumphius's Herbarium Amboinense. (See Plates I and II.)

During the early colonial period Amboina was of great commercial importance on account of the dominance of the spice trade, of which it was the center for a long time. It was first visited by the Portuguese in 1511, who established a factory there in 1521. The Portuguese were dispossessed by the Dutch in 1609, who have since retained control of the island except for the periods 1796–1802 and 1810–1814, when it was occupied by the British, being finally restored to the Dutch Government in 1814. The island is only 51 kilometers long and has an area of approximately 950 square kilometers. Salahoetoe, the highest mountain on the island, attains an altitude of 1,027 meters.

The flora of Amboina is typically Malayan, although a few Australian types are present as in other parts of the Malayan Practically all of the species found along the seacoast are of general distribution from India to Malaya and Polynesia. Likewise most of the species found in the settled areas at low and medium altitudes, weeds of cultivation, and the generally cultivated economic and ornamental plants are the same as those usually found throughout Malaya, very many of which are now distributed in all tropical regions. The primeval forest to a large extent has been destroyed at low and medium altitudes, at least in those regions best adapted to agricultural pursuits, and has been replaced over large areas by cultivated or semicultivated plants, second-growth forests, thickets, and open grasslands characterized by the dominance of the cogon or lalang grass (Imperata). In the interior on the slopes of the higher mountains, such as Salahoetoe, some forest still persists.

The island presents a considerable endemic element, but a thorough botanical exploration of the Moluccas will doubtless show that most of the species now known only from Amboina inhabit also the neighboring islands, such as Ceram, Buru, Boeton, Celebes, Gilolo, western New Guinea, and the numerous smaller islands of the Moluccas. From the standpoint of endemic species most of the neighboring islands are probably of much greater interest than is Amboina, but from the standpoint of the history of Malayan botany, no part of the Moluccas can be compared with it.

No description of the vegetation of Amboina is here attempted, as I have not personally visited the island, and Doctor Robinson

left no notes regarding the general character and appearance of the plant life of Amboina. However, a brief, general description has been given by Karsten.* The general appearance of the vegetation is apparently the same as that of similar regions in the Malay Archipelago and the Philippines, not subject to a prolonged dry season, where the original vegetation has not been entirely destroyed by man.

THE GENESIS OF THE PLAN AND THE BOTANICAL EXPLORATION OF AMBOINA

The logical and simple plan of exploring Amboina with the special object of collecting and studying the Rumphian species in their native habitat in connection with all data given by Rumphius, while perhaps conceived by other botanists, has previously been carried into effect only by the late Dr. J. G. Boerlage of the botanic garden at Buitenzorg. In 1900 Doctor Boerlage, accompanied by Dr. J. J. Smith, made a trip to Amboina for the explicit purpose of collecting in the classical localities the plants described by Rumphius, more especially material representing those species on which binomials of later authors had Most unfortunately Doctor Boerlage contracted a fever while in Amboina, which resulted in his death at Ternate, August 25, 1900, while returning to Java, with the consequence that the results of his field work were never made available. Unquestionably, many botanists who have visited Amboina and carried on field work there have realized that it was a classical locality in Malayan botany and that botanical specimens from that island would be of special value in interpreting Rumphian species, yet no single large collection has ever been made in Amboina of which the duplicates were given a wide distribution, so that the general results of previous botanical work in Amboina have not been available to many botanists who have had occasion to discuss Rumphian species. While the present consideration of the species described and figured in the Herbarium Amboinense is of necessity incomplete, and doubtless errors in interpretation have been committed both in reference to Rumphian species and to binomials, yet it is felt that the work, somewhat in the nature of an innovation in systematic botany, is a step in advance and that it should prove to be merely preliminary to more intensive field work in relation to the same

^{*} Morphologische und biologische Untersuchungen über einige Epiphytenformen der Molukken. Ann. Jard. Bot. Buitenzorg 12 (1895) 117-195, t. 13-19.

general problems not only in reference to the Herbarium Amboinense, but also to other pre-Linnean works of similar importance.

Certain post-Linnean works are susceptible of the same general treatment, especially those, like Blanco's Flora de Filipinas, in which the various species described are not represented by extant botanical material or types, but must be interpreted solely by the descriptions and data given by the author. In this connection I have in the past four years made an intensive study of all the Philippine species described by Blanco and have prepared for distribution to the larger botanical institutions of the world an extensive exsiccata which I have called "Species Blancoanae." The specimens selected for this exsiccata are those which I have determined to represent the Blancoan species, and to a large degree these specimens will take the place of Blanco's types, none of which were preserved by him. Philippine experience in attempting to interpret Blancoan species logically lead to the application of the same general methods in reference to those figured and described by Rumphius.

In 1902, on commencing botanical work in the Philippines, I was immediately confronted with the problem of interpreting the numerous forms described by Blanco in his Flora de Filipinas,* totaling about 1,130 species and varieties, of which not a single one is represented by type material, for Blanco preserved no herbarium specimens. Blanco's species, often very imperfectly described and frequently placed in the wrong genus, have for the most part not been clearly understood by subsequent authors and as a result very many of them appear in botanical literature as doubtful or imperfectly known ones. The average botanist, working in Europe or America from dried specimens alone, with few or no field notes and with no personal knowledge of the Philippines and its vegetation, has found it impossible properly to interpret very many of Blanco's species. clue to the identity of a Blancoan species is frequently found, not in the description itself, but in the appended economic data, native names, and other information given by Blanco.

My experience in the interpretation of Blanco's species convinced me that the same methods, if applied to Amboina in connection with all the data given by Rumphius in the Herbarium Amboinense, would certainly yield material by which a high percentage of the several hundred species proposed by various

^{*} Blanco, M. Flora de Filipinas (1837) LXXVIII+1-887; ed. 2 (1845) LXIX+1-619.

authors from 1753 to date might be elucidated. Rumphius's species, like those of Blanco, are not represented by extant botanical material, although it is manifest that Rumphius preserved, at least temporarily, specimens representing some of the forms that he described.* Thus, in interpreting Rumphian species, we must utilize the same general methods as those devised in securing material and data to locate Blanco's species. In the interpretation of many Rumphian species the investigator has the great advantage of the published figures, but it should be carefully noted that the figures do not always correspond with the characters of the species indicated in the descriptions (see p. 41). In interpreting Blancoan species there is the distinct advantage of his use of technical terms and the rather doubtful advantage of the binomial nomenclature; doubtful not because of the system, but from Blanco's erroneous interpretations of so many genera.

At various times, as it became necessary to interpret species in critical genera by consultation of the Herbarium Amboinense, the necessity of securing botanical material from Amboina became apparent. The desirability of securing Amboina material was discussed by Doctor Robinson and myself at various times during his first tour of duty in the Philippines, 1908–1911. As work on the Philippine flora progressed, the necessity for a definite knowledge of the Rumphian species became more and more evident, until finally the matter was taken up with the Philippine authorities, approval of the Amboina project secured, and coöperation with the authorities of the botanic garden at Buitenzorg, Java, arranged.

In preparation for his work in Amboina, Doctor Robinson made an exhaustive examination of the Herbarium Amboinense, and compiled on index cards all data that might be of assistance in his actual field work. He arranged all native names cited by Rumphius, for he realized that the clue to the identity of a Rumphian species would often be found in the native name or names cited. Regions and localities from which Rumphius secured his material were also classified, so that before commencing field work in Amboina, Doctor Robinson could determine to a great extent what species he might hope to find in Amboina and what would have to be sought for in other islands.

^{*} Martelli, U. Le collezioni di Giorgio Everardo Rumpf acquistate dal Granduca Cosimo III de'Medici, una volta esistenti nel Museu di Fisica e Storia Naturale di Firenze, estratto da un catalogo manoscritto dal Prof. Giovanni Targioni-Tozzetti (1903) 1–213.

A special field label was prepared for the work, on which he recorded data of value in connection with the problem of the determination of Rumphian species and the results of his pre-

FLORA OF THE MALAY ARCHIPELAGO

HERBARIUM, BUREAU OF SCIENCE, MANILA, P. I.

Common name	Dialect
Field No	Herbarium No
Collector, C. B. Robin	nson.
Island	
Locality	
Habitat	
Altitude above the sea	m.
Tree; shrub; woody vir	ne; herbaceous vine; herb
Height of plant	m; diameter cm.
Flower	
	`
Fruit	
Supposed to represent	
Rumph. Herb. Amb	
Identification considered	certain; probable; possible; very doubtful.
Date	, 1913.

Fig. 1. Form of field label.

liminary comparison of the actual specimens with the Rumphian figures and descriptions. This field label is shown in fig. 1.

His material, as collected, was compared with the Rumphian descriptions, and his conclusions were noted on the field labels. Specimens that were certainly, probably, or possibly identical

with forms that Rumphius considered were placed in one series. and those that could not be referred to Rumphian species were placed in another. As material was matched with forms named and described by Rumphius, such species were checked on a special list. The two series established by Doctor Robinson in the field have been the basis of the two series into which the collections were finally divided for purposes of study. specimens that could certainly or with a fair degree of certainty be referred to Rumphian species were placed in the series "Plantae Rumphianae Amboinenses," thus cited in the present work, while the remainder were placed in the series "Reliquiae Robinsonianae" and are the basis of a separate report.* Of the Plantae Rumphianae Amboinenses, the labels of which bear both the Rumphian name and reference and the binomial as determined by the accepted code of nomenclature. there are about 600 numbers; of the Reliquiae Robinsonianae, including the cellular cryptogams, there are about 960 numbers. In arranging this material and in its critical study, a few specimens have been transferred from one series to the other. both series collections made at different dates and with separate field numbers have been combined when presenting the same stage of development and unquestionably representing the same The data compiled by Doctor Robinson, as a result of his field observations and the comparison of the fresh material with the Rumphian descriptions, has been of immense value in the preparation of the present work.

During the prosecution of his field work in Amboina, it became evident to Doctor Robinson that he could not expect to find all the forms figured and described by Rumphius, nor even all of those that were from Amboina. In his progress report, written from day to day, he frequently mentioned the slow progress of the work and his disappointment in not being able to locate this or that species. He commenced his field work with the idea of taking specimens only from plants found in flower or in fruit, but he occasionally collected single specimens from sterile plants for purpose of check. It is evident that he had located a number of species described by Rumphius of which he collected no botanical material, but which he was watching in the hope that he could later find them in flower or in fruit. At various times he indicated his purpose to collect sterile material of the species that he could not find in flower or in fruit before

^{*} Merrill, E. D. Reliquiae Robinsonianae. *Philip. Journ. Sci.* 11 (1916) *Bot.* 243-319.

his final departure from Amboina, a plan that was never carried out on account of his sudden and unexpected death. Many of the very common species, such as the coconut, the betle nut palm, the papaya, and numerous cultivated ornamentals, are lacking in the collection chiefly for the reason that the actual preparation of specimens of these common and well-known plants was purposely deferred until the more important and critical species had been secured.

In the prosecution of his field work in Amboina, Doctor Robinson was handicapped by the same factors that have hindered our attempts to secure material in the Philippines to clear up the status of Blanco's species. With the increase of population in Amboina, as in the Philippines, the original vegetation has been totally destroyed over large areas, the virgin forest being replaced by grasslands, thickets, and second-growth forests of a type entirely different from the original vegetation. Many species definitely mentioned by Rumphius as occurring in specific localities can no longer be found in the indicated places. It is by no means improbable that many species, common in Amboina in the seventeenth century, have now become extinct there, or at least are very rare and local, even as various Philippine species mentioned by Blanco as occurring in definite localities can no longer be found within many miles of the respective places mentioned by him. Native names given by Rumphius have in many cases become obsolete or are so altered as to be hardly recognizable, although in many cases the name cited by Rumphius is still in use and for the same species under which it was cited by him. Rumphius, like Blanco, secured most of his material from the settled areas and from the forests at low altitudes, and it is unfortunately true that, in the Malavan region. the forest vegetation at low altitudes is the vegetation most rapidly destroyed by the encroachment of man.

The practical extermination of the original vegetation of those regions best adapted to agricultural pursuits is a subject that deserves more consideration than it has received.* Unquestionably, many species of plants have been exterminated in various parts of the Malayan region within the past century as the population has increased. The areas devoted to agriculture are rapidly being enlarged in many parts of this vast region, and the consequent destruction of primeval forests over large areas is a strong argument in favor of a vigorous and intensive botanical

^{*} Merrill, E. D. Notes on the flora of Manila with special reference to the introduced element. *Philip. Journ. Sci.* 7 (1912) *Bot.* 145-208.

exploration of Malaya, in order that representatives of certain elements of the flora shall be secured while they are still available or at least easily accessible. A continued and intensive exploration of the Moluccas is greatly to be desired before the actual plants that will yield material to clear up various Rumphian species of doubtful status shall have become extinct or at best local and of rare occurrence.

It was originally planned that Doctor Robinson should prosecute his field work for about four months, but as the work progressed it became increasingly evident to him that this period of time was altogether too short. On the basis of representations made by him, Doctor Robinson was authorized to continue his field work until June, 1914, thus giving him practically a year in the field. It was planned that he should also extend his field work to neighboring islands, and at the time of his death he had made arrangements to visit Buru Island, as for the season he had secured a high percentage of the Amboina species to be found in flower or fruit. It was fully realized that his time could be more profitably spent in exploring neighboring islands, utilizing the intermediate periods between trips for a reëxamination of the various parts of Amboina for the purpose of locating in flower or fruit those species that had not been detected during his first period, July to December, of intensive field work. His wholly unexpected death prevented the fulfillment of these plans.

This work has been based on the material and observations secured in a period of four and one-half months. It is evident that could the revised plan have been carried out and field work extended until June, 1914, much more material and data would have been available for study, with the result that the interpretation of the Herbarium Amboinense would have been more satisfactory and more nearly complete than it is.

Botanists and collectors who have actually prosecuted field work in Amboina* include LaBillardière, the first naturalist to visit the island after Rumphius's death, Christopher Smith, the younger Roxburgh, Lahaie, Reinwardt, d'Urville, Zippel, Lesson, Hombron, Forsten, de Vriese, Teysmann, Naumann, Binnendyk, de Fretes, Beccari, Forbes, Warburg, Karsten, Boerlage, Treub, J. J. Smith, and Robinson. Some were there but for a few days, others for longer periods; and their collections, now widely scattered in different herbaria, comprise several thousand specimens. Were it possible to segregate from the various herbaria

^{*} Warburg, O. Die botanische Erforschung der Molukken seit Rumpf's Zeiten. Rumphius Gedenkboek 1702-1902 (1902) 63-78.

all of the Amboina material extant, doubtless many other obscure points regarding Rumphius's species could be elucidated, which in the following critical consideration I have been obliged to interpret from published descriptions alone. Doctor Robinson's four and one-half months of field work in Amboina were insufficient in which to secure the necessary material and data to settle all of the doubtful points in connection with the forms described by Rumphius from Amboina material alone, and he had no opportunity to visit neighboring islands to search for special material that might serve to determine the status of Rumphius's rather numerous extra-Amboina species.

ERRORS IN THE INTERPRETATION OF RUMPHIAN SPECIES

The early botanical authors, such as Linnaeus, Burman f., Loureiro, Lamarck, and numerous others, had but a slight conception of the principles of geographic distribution of plants, and accordingly in their reductions of Rumphius's species many grave errors were committed. Very often in the early literature one finds the illustrations of an Amboina plant quoted as an exact synonym of a species of Indo-China, when in reality the two are totally different and not infrequently have been found to represent different genera. It is not at all certain that in quoting illustrations of various species as synonyms Linnaeus and his contemporaries and immediate successors intended them as exact synonyms; it would seem, in many cases at least, that the citations of illustrations as synonyms was intended to convey to other botanists some conception of what the species was like, and not necessarily to indicate that it was an exact equivalent of the species under which it was cited.

In the first two or three decades following the death of Linnaeus systematists were conservative in the matter of describing new species. There was a very strong tendency to refer specimens to species already named by Linnaeus, rather than to describe material, even from distant and relatively unknown parts of the world, as new. Thus we find Loureiro in his Flora Cochinchinensis, published in 1790, erroneously referring numerous Cochin-China specimens to Linnean species and likewise attempting to match his Cochin-China material with the Amboina species described and figured by Rumphius, apparently on the assumption that if a plant grew in Cochin-China, it should also grow in Amboina. In Loureiro's work there are scores of cases where the Rumphian name and figure are quoted as an exact synonym of a Cochin-China species described by him as new.

In very many cases Loureiro took his specific name from Rumphius, yet in not a single case is a species described by Loureiro to be interpreted by the reference to Rumphius, as his descriptions were not based on data supplied by the Herbarium Amboinense, but on actual specimens from Cochin-China or southern China.

We find the same condition in Burman f., Flora Indica (1768), where Burman's conception of the species proposed was not gained from the Rumphian synonym cited, often the only one given, so much as from actual specimens from Java or from some other part of the Indo-Malayan region; in few cases are Burman's species, as published in his Flora Indica, to be typified by the Rumphian reference cited. In the early volumes of Lamarck's Encyclopédie we find likewise numerous cases where species actually described from specimens originating in the Mascarene Islands, in the Philippines, and in other regions remote from Amboina are supplied with a Rumphian synonym. which usually has proved to be misplaced. Error after error has crept into systematic botany by interpretation of species by a Rumphian synonym, wrongly placed, rather than by consultation of the actual type specimen. These errors, once published, have been perpetuated by other authors, sometimes because of failure to interpret types properly, sometimes because of lack of interest in problems of nomenclature, sometimes because of non-accessibility of type specimens for purposes of comparison, and for other reasons. By way of illustration I need cite only one or two extreme cases.

The type of Fagara triphylla Lam. is a Philippine specimen collected by Sonnerat, and a recent examination of it in Lamarck's herbarium at the Museum d'histoire Naturelle, Paris, shows it to be identical with the endemic Philippine Melicope luzonensis Engl. De Candolle, however, apparently interpreting Fagara triphylla Lam. chiefly from the Rumphian synonym, Ampacus angustifolius Rumph., cited by Lamarck in the original description, transferred it to Evodia as Evodia triphylla DC.; and later authors, also interpreting it from the Rumphian synonym, have given Evodia triphylla (Lam.) DC. a range extending from India to Japan southward through Malaya to New Guinea. In clearing up this question of synonymy * I have shown that Fagara triphylla Lam.=Evodia triphylla DC.=Melicope triphylla Merr. is a species confined to the Philippines; that Evodia tri-

^{*} On the identity of Evodia triphylla DC. Philip. Journ. Sci. 7 (1912) Bot. 373-378.

phylla of various authors includes at least three distinct species in two different genera; and now the occurrence of true Ampacus angustifolius Rumph. in the Amboina collection shows that this Rumphian species, while a true Evodia, represents still another distinct species. Evodia triphylla DC. as interpreted by various authors has included at least four distinct species in two different genera.

Another case is that presented by Ricinus mappa Linn., based wholly on Folium mappae Rumph. This is the basis of Macaranga mappa Muell.-Arg., Mueller extending the range of the species to the Philippines by the erroneous reduction of Croton grandifolius Blanco as a synonym. I have shown that Macaranga grandifolia (Blanco) Merr. is a species entirely distinct from Macaranga mappa Muell.-Arg., yet Pax and K. Hoffman* in their recent monograph of this group interpret Macaranga mappa (Linn.) Muell.-Arg. wholly from Philippine specimens, erroneously citing Croton grandifolius Blanco, Macaranga porteana André, and Macaranga grandifolia Merr. as synonyms. and even figuring the species from Philippine material. A casual comparison of Philippine material with Rumphius's figure, the type of Ricinus mappa Linn.=Macaranga mappa Muell.-Arg., shows that two totally different species are involved. rence of typical Folium mappae Rumph. in Robinson's Amboina collections shows conclusively that I was correct in separating the Philippine form, that Mueller was wrong in reducing Ricinus grandifolius Blanco to Macaranga mappa, and that Pax and K. Hoffman were entirely wrong in their interpretation of Macaranga mappa Muell.-Arg. The two species involved are so entirely different that they belong in distinct sections of the genus.

THE INTERPRETATION OF RUMPHIAN SPECIES AS TYPES

In the interpretation of the species of older authors under which Rumphian names are cited as synonyms one point must constantly be kept in mind. This is, as to whether the species was based on an actual specimen in the hands of the author or, by citation, wholly on the Rumphian description and figure. In nearly every case it is possible to determine this point merely by an examination of the description, for even when no specimen is actually cited, if the species was based on an actual specimen, data are usually given that could not have been derived from

^{*} Euphorbiaceae-Acalypheae-Mercurialinae. Engl. Pflanzenreich 63 (1914) 320.

either Rumphius's description or figure. Even in Linnaeus's works descriptions based on actual specimens rather than on cited synonyms are usually thus determinable. I have already noted that none of Loureiro's species, even when the specific name is taken from Rumphius, are to be interpreted by the Rumphian synonym cited. The same is true of most of Burman's species published in his Flora Indica, many of those proposed by Lamarck, and those of many other authors. Where a species was based on an actual specimen supplemented by a reference to Rumphius, the specimen is manifestly the type, but it then becomes necessary to determine whether or not the specimen represents the same species as the Rumphian synonym cited. In a very high percentage of such cases the actual specimen described has been found to represent a species different from the one figured by Rumphius, due to the fact that the early authors, having little conception of the geographic distribution of plants, failed to distinguish between the indigenous and endemic elements in the Amboina flora and those species of wide distribution. Among all of the earlier workers there was a strong tendency to refer the Rumphian illustrations to species described from actual specimens, even if there was only a superficial resemblance between the specimen and the figure. None of them realized the necessity of interpreting Moluccan species from Moluccan specimens; and, even if the value of such procedure were realized, no botanical material from Ambonia was available to European botanists until the close of the eighteenth century and, even then, only a limited amount.

In the present consideration of the Herbarium Amboinense those species and their synonyms that were based solely on plants described and figured, or merely described, by Rumphius have been indicated by the term "type!" in parentheses following the citation. The list of such species could doubtless have been extended if in the course of the preparation of the manuscript, I had had access to all the literature. As it is, nearly 350 such "types" have been indicated. From the standpoint of taxonomy then, the Herbarium Amboinense is of relatively very great importance, for its descriptions and figures typify a very large number of binomials of later authors. Only two other pre-Linnean works on the Indo-Malayan flora can be compared with the Herbarium Amboinense in this respect, these being Rheede's Hortus Malabaricus and Linnaeus's Flora Zeylanica, and most of the actual specimens on which the later work was based are extant.

THE INTERPRETATION OF THE SPECIES DESCRIBED IN THE HERBARIUM AMBOINENSE BY VARIOUS AUTHORS

LINNAEUS AND STICKMAN

Citations of Rumphian synonyms are found in the first published work on the binomial system,* but these are few and of slight importance, as Linnaeus did not secure a copy of the Herbarium Amboinense until his manuscript was completed:

Upus eximium beati Rumphii cura amplissimi D. Burmanni orbi botanico redditum, ad me accessit primum absoluto a typographo opere, cujus itaque synonymia seorsim tradere animus est. \dagger

About nineteen Rumphian synonyms are cited in the first edition of the Species Plantarum, of which four are in volume one, the remainder in volume two, but in only four cases are the Linnean species based wholly on the Rumphian synonyms, and these are all found in the Appendix. The list is as follows:

Cynometra cauliflora Linn. Cynometra ramiflora Linn.

- Averrhoa carambola Linn.
- V Averrhoa bilimbi Linn.
- Garcinia mangostana Linn.
 Acrostichum siliquosum Linn.
- Borassus flabellifer Linn.
- Corypha umbraculifera Linn.
 Cycas circinalis Linn.
- Cocos nucifera Linn.

- Areca catechu Linn.
- Caryota urens Linn.
 Plukenetia volubilis Linn.
 Hibiscus surattensis Linn.
 Rubus parvifolius Linn.
 Rubus moluccanus Linn.
 Convolvulus peltatus Linn.

Quercus molucca Linn. Croton variegatus Linn.

The last four are based wholly on Rumphius's figures and descriptions. The new genus and species, *Rumphia amboinensis* Linn., is not based on Amboina material, contains no reference to the Herbarium Amboinense, and is the Indian *Cordia tiliaefolia* (Poir.) Warb.‡

Linnaeus realized the great importance of Rumphius's work and at once assigned to one of his students, Olaf Stickman, a study of the Herbarium Amboinense. In the following year, 1754, Stickman's dissertation on the Herbarium Amboinense was printed, this being probably the first work published following the binomial system of nomenclature after the system was proposed. Stickman's publication is discussed below.

In the second edition of the Species Plantarum § Rumphius's Herbarium Amboinense is listed among the "Auctores Reforma-

† Linnaeus, C. Op. cit. 1199.

^{*} Linnaeus, C. Species Plantarum (1753) 1-1200.

[‡] Rumphius Gedenkboek 1702-1902 (1902) 78.

[§] Linnaeus, C. Species Plantarum ed. 2 (1762-63) 1-1684.

tores" and is placed in the group of "Fundadores." Numerous reductions of Rumphian species had already been made in Stickman's dissertation on the Herbarium Amboinense (1754), in the 1759 reprint of this work,* and in the tenth edition of the Systema Naturae (1759), most of which are repeated in the second edition of the Species Plantarum; in all there are about 275 references to the Herbarium Amboinense in this work. Additional references are included in Linnaeus's later works.

The first attempt to interpret the species described and figured in the Herbarium Amboinense as a whole in terms of the binomial system of nomenclature was made one year after the system was proposed. This was nominally the work of Olaf Stickman, one of Linnaeus's pupils, but it is manifest that the actual work was largely that of Linnaeus himself. Stickman's dissertation,† as originally published, is a very rare work, and copies of it are known in but few libraries. Rouffaer and Muller ! cite only two copies, one in the University Library at Upsala, Sweden, and one in the Königliche Hof- und Staatsbibliothek, Munich. There is a copy in the library of the Linnean Society, London; one in the library of the British Museum; one in the library of the New York Botanical Garden; and one in the private library of Dr. J. H. Barnhart, of the New York Botanical Garden; and I was so fortunate as to secure a copy from a European dealer for our work on the Amboina project. Doubtless other copies will be found in the older European libraries.

In this work an attempt was made to reduce only those species figured by Rumphius in volumes one to six of the Herbarium Amboinense; volume seven, the Auctuarium, was not printed until the year following the appearance of Stickman's work and is, accordingly, not included. The species are arranged in the Rumphian sequence, giving the Rumphian name, the numbers of the plates, and the binomial equivalents of the various species so far as they could be determined. About three hundred of the forms figured by Rumphius are referred to binomials already proposed in the first edition of the Species Plantarum of Linnaeus,

^{*}Amoen. Acad. 4 (1759) 112-143.

[†] Herbarium Amboinense, | quod | consens. experient. Facult. Medicae | in Regia Academia Upsalensi, | sub praesidio | viri nobilissimi atque experientissimi, | Dn. Doct. Caroli | Linnaei, | | publico examini submittit, | Alumnus Regius | Otavus Stickman, | Smolandus. | In auditorio Car. Majori d X. Maji, | anno MDCCLIV | Upsaliae | (1754) IV+1-28.

[‡] Eerste proeve van eene Rumphius-Bibliographie. Rumphius Gedenkboek 1702-1902 (1902) 196.

or published for the first time in this dissertation. In addition to these three hundred specific reductions, many others are referred to generic names under the Linnean system, about twenty to species characterized by Rheede in his Hortus Malabaricus, and a few are connected with other pre-Linnean names. As is to be expected many of the proposed reductions have since been shown to be wrong.

In this work more than twenty binomials appear for the first time, and these, typified by the Rumphian figures and descriptions, although validly published, were overlooked by the compilers of Index Kewensis and do not appear in that work or, if included, are credited to later publications. Among these are the following:

Garcinia celebica Linn.
Psidium cujavus Linn.
Myrtus leucadendra Linn.
Momordica indica Linn.
Plumbago indica Linn.
Tragia scandens Linn.
Erythrina variegata Linn.
Rhizophora caseolaris Linn.
Rhizophora corniculata Linn.
Ricinus mappa Linn.
Ricinus tanarius Linn.

Lens phaseoloides Linn.

Menispermum flavum Linn.

Adenanthera falcata Linn.

Hernandia ovigera Linn.

Convallaria fruticosa Linn.

Piper decumanum Linn.

Bromelia comosa Linn.

Dolichos pruriens Linn.

Momordica trifolia Linn.

Pothos latifolius Linn.

Pancratium narbonense Linn.

Under modern conditions there would be no question whatever as to the authority for these names, for unless otherwise stated in the text the authority would be the author of the Dissertation. In this case the work was done under Linnaeus's inspiration and direction, and the reductions of the Rumphian species must have been made largely, if not wholly, by him. İ have accordingly quoted Linnaeus as the authority for all new combinations appearing in Stickman's dissertation.

In 1759 Stickman's Dissertation was reprinted under the title "Herbarium Amboinense, sub praesidio D. D. Car. Linnaei, proposuit Olavus Stickman, Smolandus''* Whatever doubt there may be as to the actual authorship of the original edition of Stickman's work in 1754, the 1759 reprint must certainly be credited to Linnaeus. This differs from the original edition notably in that the contents of volume seven of the Herbarium Amboinense, the Auctuarium, are included, while appended to the treatment of the Rumphian species is the "Flora Amboinensis," in which the species recognized are arranged under the Linnean classes Monandria, Diandria, etc., to which in turn an "Appendix"

^{*}Linnaeus, C. Amoen. Acad. 4 (1759) 112-143.

is added to include the Palmae and "Singulares." In the treatment of the species figured in volumes one to six of the Herbarium Amboinense, the 1759 reprint differs from the original edition in certain respects. Some corrections are made in the indicated binomials, and a few new ones are added. The number of Rumphian species reduced in this work is about 330, an increase of about 30 over the original edition, but this includes 12 from the Auctuarium that were not included in the 1754 edition. in the original edition, certain binomials which have not been listed in Index Kewensis, appear in the 1759 reprint. Among these are Muntingia bartramia, Phaseolus cylindricus, Panicum vulpinum, Justicia bivalvis, Sesuvium portulacastrum, Varneria augusta, Lagerstroemia chinensis, and Canarium indicum. In the present work Linnaeus has been quoted as the authority for these binomials, as well as for those appearing in the original, 1754, edition.

BURMAN

Burman, in editing the Herbarium Amboinense, added various notes on the identity of the Rumphian species and at the end of volume seven, the Auctuarium (1755), added his "Index universalis in sex tomos et auctuarium herbarii Amboinensis Cl. Georgii Everhardi Rumphii," in which he reduced about 311 of the Rumphian species to the Linnean binomial system, for the most part following the reduction proposed by Linnaeus in Stickman's dissertation issued the preceding year. Here he also published a few new binomials typified by Rumphius's figures, which have been entirely overlooked by all later authors. Those in the vegetable kingdom are Mespilus silvestris Burm., Phaseolus marinus Burm., Pepo indicus Burm., and Aurantium maximum This index consists of twenty pages, unnumbered, the species being alphabetically arranged under their Rumphian names with references to the book, the chapter, and the volume in which they are described.

In 1769 a second edition of this index was issued by Burman, under the title—

Index alter in omnes tomos Herbarii Amboinensis Cl. G. Everhardi Rumphii quem de novo recensuit, auxit et emendavit Joannes Burmannus, M. D. Botanices Professor, Academiae Caesareae Naturae Curiosum, nec non Regiae Scientiarum Academiae Upsaliensis membrum.

It consists of twenty-two unnumbered pages, folio, and is apparently a rare work. Rouffaer and Muller * in their bibliography cite an example of it which they examined in the library

^{*} Rumphius Gedenkboek 1702-1902 (1902) 200.

of the K. Svenskt Vetenskapsakademien, Stockholm, and one in the private library of Doctor Greshoff, late director of the Colonial Museum at Haarlem, Holland; they consider it remarkable that the work is lacking in such libraries as those of Leiden, Upsala, Halle, and Munich. There are copies in the libraries of the British Museum; the Linnean Society, London; and the Royal Botanic Garden, Kew, England; and I have been supplied with a photostat copy of it by Dr. Walter T. Swingle, of the United States Department of Agriculture, Washington, D. C. The second edition differs from the original chiefly in the additional reductions included. A total of about 458 binomials appear in this work, nearly 150 more than in the first edition. tions included are chiefly those indicated in the second and the third editions of Linnaeus's Species Plantarum and in the younger Burman's Flora Indica, the latter having been published Two new binomials appear, Achyranthes spiciflora Burm. and Verbesina aquatica Burm., the former, from the reference given, manifestly a misprint for Acalypha spiciflora Burm. f.; while of the four published in the first edition in 1755 Aurantium maximum Burm, is eliminated in favor of Citrus decumana Linn.

BUCHANAN-HAMILTON

Doctor Francis Buchanan-Hamilton commenced a critical consideration of the Rumphian species, which, however, was never completed or, at least, except for the first two parts, never published. The first part is entitled A Commentary on the Herbarium Amboinense, Liber Primus; and the second part, A Commentary on the Second Book of the Herbarium Amboinense.* The work is of considerable interest and value. Each species described by Rumphius is discussed to a greater or less length with critical notes on the identity of the individual species and with reasons for and against the various proposed reductions. Hamilton was handicapped by lack of knowledge of the Malayan flora and attempted to interpret the Rumphian species largely from his experience with the Indian flora. various forms actually described from Indian material are usually specifically distinct from the Rumphian species under which they were placed; but Hamilton usually does not claim that the Rumphian species is identical with the one he describes; he merely says that the two resemble each other or are manifestly allied. In a few cases, in the first part of his work, he proposed binomials typified by the Rumphian species, but none of these

^{*}Mem. Wern. Soc. Edinburgh 5 (1826) 307-383; 6 (1832) 286-333.

appear in the second part. Unlike his predecessors who had attempted to interpret the Rumphian species, he did not confine his comments to the species figured, but also attempted to account for those described but not figured.

HENSCHEL

Henschel's * attempt to interpret the species described by Rumphius is merely an enumeration of the Rumphian species by volumes in the order in which they appear in the Herbarium Amboinense, with their binomial equivalents, so far as determined, in parallel columns. He considers chiefly the species figured by Rumphius. The enumeration, a mere compilation, is very faulty and untrustworthy, as is to be expected, for Henschel was not a botanist and had no personal knowledge of the Indo-Malayan flora. New binomials, with one or two exceptions, do not occur in this work, nor is there any critical discussion of the various species. The Clavis Herbarii Amboinensis of Henschel in arrangement compares closely with the sequence of Rumphian species published in the present work at the end of the systematic enumeration (p. 511 to 547), except that through the work of numerous botanists on the Malayan flora a very much higher percentage of the Rumphian species can now be placed than Henschel found possible. Henschel's work is, in general, of very slight value, so far as it applies to the species Rumphius described and their binomial equivalents.

HASSKARL

The most pretentious attempt heretofore made to interpret the species described in the Herbarium Amboinense is that by Doctor J. K. Hasskarl, entitled Neue Schlüssel zu Rumph's Herbarium amboinense.† In this work the species are arranged under the Rumphian names in Rumphius's sequence, citing the page and plate numbers for each, the native names, and a chronological arrangement of the reductions proposed by various authors, with citations of literature. Hasskarl's work is scarcely more than a compilation, but is a remarkable example of patience and perseverance on the part of the author. The mere matter of

^{*}Henschel, A. G. E. T. Clavis Herbarii Amboinensis pp. 139-202, in his Vita G. E. Rumphii, Plinii indici accedunt specimen materiae Rumphianae medicae clavisque herbarii et thesauri Amboinensis. (1833) XIV+1-216.

[†] Abhandlungen der Naturf. Gesellschaft Halle 9 (1866) 145-389; Reprint (1866) 1-247.

searching the literature from 1753 to 1866 for references to the Herbarium Amboinense must have entailed many months of exacting labor. Where numerous synonyms are cited, or at least numerous names are listed, to which a Rumphian species has been reduced, usually no opinion is expressed as to which is the correct one. Many of those suggested by Hasskarl himself are palpably wrong, due perhaps to his lack of knowledge of the Malayan flora. It is not evident that Hasskarl ever had a very wide knowledge of the flora of the Malay Archipelago in spite of his residence in Java and his published botanical contributions. Many of his errors of interpretation were primarily due to the same factor that caused others to fail in properly interpreting Rumphius's species: that is, a lack of botanical material from Amboina and the neighboring islands. On account of the method of arranging his data, Hasskarl's work is difficult to consult. is entirely unsatisfactory in aiding the botanist to gain a definite idea of which species are actually included in Rumphius's work and which are not, and because of the numerous errors in reductions is. it is feared, more or less discredited among botanists familiar with the Malayan flora.

Hasskarl's work performed one distinct service that his predecessors failed in. Stickman, Linnaeus, Burman, and Henschel dealt only or largely with the species figured by Rumphius, ignoring the descriptions to a large extent; Hasskarl, however, brought out clearly the fact that Rumphius described very many more forms than he figured. He perhaps went to extremes in enumerating all the variants of such plants as the coconut palm, sugar cane, rice, banana, and other cultivated forms, and certainly went to extremes in attempting to reduce the Rumphian descriptions of these variants to named forms and varieties under the binomial system. Several binomials were proposed by Hasskarl, typified by citation of Rumphius's descriptions and figures, in attempting to account for Rumphius's species. These were overlooked in compiling Index Kewensis, but invariably fall as synonyms.

In consulting Hasskarl's work, it should be noted that the numerous citations of Loureiro, Flora Cochinchinensis, are of the second, or Willdenow's, edition, 1793; that the references to Linnaeus are not to the original works of this author, but to Richter's Codex Botanicus Linneanus (1840); while Stickman's 1754 dissertation on the Herbarium Amboinense, and usually also the 1759 reprint, is not cited.

THE PRESENT STATUS OF RUMPHIAN SPECIES

Rumphius named and described approximately 1,700 plants that he considered to represent distinct forms. However, many of the plants he named and characterized are "forms" or "varieties" rather than "species" in the generally accepted sense of these words. Slight variations in the color of the leaves, of the flowers, or of the stems of plants; equally slight differences in the size of certain parts; and other trivial characters were deemed by him to be of sufficient importance to warrant the characterization of the form and the bestowal of a distinctive name. Thus, in the case of cultivated plants, such as the coconut, the betel-nut palm, the sago palm, the sugar cane, taro, rice, and balsam, both slight and prominent variants were distinguished, while in wild plants equivalent distinctions were often made.

In terms of the binomial system, as species are understood to-day, the 1,700 forms named and to a greater or less degree characterized by Rumphius can be reduced to about 1,200 species, including those that, while apparently distinct, are of more or less doubtful status and have not been definitely referred to any genus. Of these 1,200 species about 930 can be definitely or fairly definitely referred to binomials, and about 140 additional ones can be safely placed in their respective genera, leaving about 130 that from data and material at present available cannot be definitely located under the binomial system; some of these cannot be even placed in their proper families. A high percentage of these doubtful species are those that are very imperfectly and briefly described, some being scarcely more than casually mentioned; few of them are figured.

As already noted, many binomials have been based wholly on the Rumphian figures and descriptions. In about 800 cases references to the Herbarium Amboinense are found in the original descriptions or publications of species, while about 350 binomials have been based wholly on various species more or less imperfectly characterized by Rumphius. During the past one hundred and thirty-five years numerous botanists have attempted with greater or less success to interpret these Rumphian species by connecting the Rumphian names and descriptions with actual botanical specimens. Many errors in interpretation and in identification have been made, but the general results have been such that to-day a high percentage of the Rumphian species have been definitely connected with extant botanical material, and their true status has been determined. As a result of Doctor Robinson's

work in Amboina, the list of doubtful species has been greatly reduced.

In the present consideration about 930 of the Rumphian species have been definitely referred to binomials, and of these about 470 are definitely represented by botanical specimens collected by Doctor Robinson. It should be borne in mind, however, that many of the species that are not represented by specimens collected by Doctor Robinson were originally described by Rumphius from material that did not originate in Amboina, much of it coming from distant lands (see p. 14).

There are about 45 species, proposed by various authors, that are known to-day only from the data originally given by Rumphius; that is, those species that have not been, to my knowledge, definitely and correctly connected with actual botanical specimens from which in turn their true characters and relationships can be determined. Among these species of doubtful status are the following:

Lentinus tuber regium Fries. Lentinus diamor Fries. Agaricus moschocaryanus Strinz. Polygaster sampadarius Fries. Pachyma tuber regium Fries. Pachyma hoelen Fries. Pandanus repens Mig. Pandanus baggea Miq. Pandanus terrestris Warb. Freycinetia graminea Blume. Bambusa excelsa Miq. Bambusa(Schizostachyum) longinodis Mig. Livistona bissula Mart. Calamus graminosus Blume. Calamus rumphii Blume. Calamus pisicarpus Blume. Calamus buroensis Mart. Calamus equestris Willd. Calamus cawa Blume. Calamus acidus Becc. Daemonorops niger Blume. Alpinia uviformis Horan.

Michelia tsiampacca Linn.

sp. (Uvaria

Polyalthia

Lam.).

Blume). Goniothalamus sp. (Uvaria tripetala Talauma rumphii Blume. Mangifera utana Ham. Mangifera tapia Ham. Dillenia serrata Thunb. Sindora galedupa Prain. Actinodaphne rumphii Blume. Actinodaphne moluccana Blume. Canarium balsamiferum Willd. Canarium hirsutum Willd. Canarium zephyrinium Blume. Canarium sp. (Canariopsis paucijuga Mig.). Canarium sp. (Pimela caryophyllacea Osmoxulon umbelliferum Merr. Schefflera sp. (Brassaia littorea Seem.). Panax anisum DC. Hoya alba Kostel. Hoya elegans Kostel. ligularis Ipomoea rumphii Mia.

Polyalthia sp. (Guatteria rumphii

Doubtless some of these species are represented in herbaria rich in Malayan material, but so far as published records go, such specimens have never been definitely connected with the published species that they may represent. The importance of interpreting species based on Rumphius's descriptions from actual specimens collected as near the classical locality as possible cannot be overestimated, and the sooner the above doubtful species are definitely connected with botanical material by which their true characters can be determined, the nearer we will be to the long hoped for stable nomenclature.

DIFFICULTIES IN THE PROPER INTERPRETATION OF RUMPHIAN SPECIES

The difficulties involved in attempting to interpret the species described by such an author as Rumphius in terms of the binomial system are very great. The actual working up of the Amboina collection has involved two entirely different sets of identifications, first an identication with the form Rumphius described or described and figured; and, second, a further identification of the same specimen to its proper genus and species under the binomial system. Neither task has been an easy one, for very obvious reasons.

In dealing with the Rumphian descriptions, many difficulties are encountered. While often very long, the descriptions are nontechnical, and measurements are largely approximate or comparative. The parts of the flowers are not described in detail. and often they are not even mentioned. The plants described in a single chapter under a "generic" term may belong to a single genus, as the term is understood to-day, or may belong in entirely different genera in distinct or even unrelated families. forms are only casually described, sometimes scarcely more than mentioned, while of others the description is reduced to a general description of the wood only. Very many of these casually described species were not based on Amboina material, but on specimens transmitted to Rumphius from various parts of Asia and Malaya. To a certain degree we have succeeded definitely in placing a high percentage of the species that are amply described and figured and a fair percentage of those that are but casually mentioned, but much remains to be done on this subject.

Another factor that has rendered identifications difficult or uncertain is the figures themselves. While many of them are excellent and can be unmistakably referred to their proper species in the binomial system from an examination of the figures alone, others are very crude; some are imperfect in that they delineate only leaf specimens; some are manifestly based on material originating from entirely distinct species or even from representatives of different genera and families, and some do not agree at all with the descriptions to which they are ascribed. As already noted the artist has frequently depicted the leaves on one scale and the attached inflorescences, flowers, or fruits, as the case may be, on an entirely different scale. Very frequently the leaves are reduced in size, while the other parts may be greatly enlarged. In consulting the Herbarium Amboinense, it should be borne in mind that Rumphius himself never saw the figures, which were drawn by various artists after he became blind (see p. 16).

Rumphius's idea of the species was not at all that of the species as understood to-day, nor can his chapter heads be considered as corresponding to the modern conception of the genus. As noted by Doctor Robinson in one of his letters to me:

Rumphius imbibed the native ideas on the relationships of plants, and did his best to improve on them. Now the natives here to-day, and I think certainly also in his time, base their opinions largely on habit and leaf characters, or perhaps on habitat; thus mangi-mangi covers the whole mangrove family (Rhizophoraceae) with Sonneratia thrown in. Also to the characters utilized by the natives in making identifications should be added wood characters, latex if any, taste and smell of leaves, flowers, and Neither he nor they appreciate the primary value of flowers or fruit or of compound leaves. Again the methods of distinguishing species that we use were entirely unknown to him, as they are to the natives here to-day. We are so accustomed to putting emphasis on simple versus compound and opposite versus alternate leaves; superior versus inferior ovary; and apetalous, polypetalous, and gamopetalous flowers and the number of their parts, that it is difficult to follow a man who took no count of any of these characters, except as to the compound leaves, while his opposite leaves are often opposite leaflets. He says in one place that a menispermaceous plant "maxime convenit" with what proves to be Derris uliginosa of the Leguminosae; what then about some of the other plants he described that "maxime convenit," when there is no illustration to suggest the identity of the species involved? Take the case of Ternstroemia, Ichthyoctonos montana of Rumphius. It is most excellently described and the illustration is fair, yet in this chapter he describes three forms which differ in the color of the wood and of the roots. It is incredible that in an island of this size that there can be three species of this small and characteristic genus to each of which the description can correspond so far as it goes and yet be worthy of being interpreted as three distinct species of Ternstroemia. There are two possible conclusions regarding it, and many other similar cases, first, that there is really only one species of Ternstroemia and that the differences are merely superficial; and, second, that he had in mind three really different species, not unlikely in as many different families of plants, but that the detailed description applies to one only; the other two forms briefly mentioned in this chapter are inextricable with certainty. Even if a sufficiently perfect knowledge of all the plants found in Amboina did enable us correctly to guess what was intended by the second and third forms of Ichthyoctonos, there is nothing in Rumphius's statements by

which the correctness of the interpretation could be checked. Again Macuerus is divided into "mas" and femina;" one is a Cyrtandra, of the Gesneriaceae, and the other is a Pellionia, of the Urticaceae, but he almost certainly included in the latter an equally common Elatostema. Conocephalus, of the Moraceae, and Medinilla, of the Melastomataceae, are placed together. It will take much critical work certainly to distinguish in the Herbarium Amboinense such dissimilar plants as Pipturus, of the Urticaceae, Zizyphus, of the Rhamnaceae, other melastomataceous plants including some species of Medinilla, Celtis, of the Ulmaceae, and even Strychnos, of the Loganiaceae.

Very many similar cases could be added, but the above statement clearly indicates one particular phase of the difficulties involved in the interpretation of Rumphian species.

The difficulties involved in identifying material under the binomial system have been very real. The herbarium of the Bureau of Science contains only such material as could be accumulated by actual field work and by exchanges in the past fifteen years, and while it contains a very fine series of Philippine species and much valuable material from the Indo-Malayan region generally, many species that I should like to have seen are lacking. Identifications, other than of those species already familiar to me, have been largely made by comparisons with the published descriptions, and very many such descriptions are entirely inadequate, especially those of the early authors. ever possible the original descriptions have been examined, but a number of works that it has been desirable or essential to examine in the course of the preparation of this manuscript are not available in Manila. In very numerous cases resource has been had to transcriptions or photographic reproductions of essential descriptions, and such data have been supplied by various botanists in Europe and America. In one form or another I have thus been able to examine nearly all of the references to Rumphius cited in this work.

In the present consideration of the Rumphian species I have departed radically from the works of previous authors. In order to make the work more generally available to botanists, the Rumphian species, so far as they can be reduced at present, are cited as synonyms under the various species and genera to which they refer, these again being arranged by families and genera in the sequence of Engler and Prantl's Natürlichen Pflanzenfamilien. Appended to this systematic treatment of the Rumphian species is a list under the Rumphian names arranged in the sequence of the Herbarium Amboinense, giving references to the volume, the page, and the figure under each and, so far as determinable, their binomial equivalents.

NOMENCLATURE

In nomenclature the rules of the Vienna Botanical Congress * have been closely followed, including the list of nomina conservanda as well as the supplementary list adopted by the Brussels Botanical Congress.† The sole exception in the list of nomina conservanda is the adoption of the generic name Taetsia in place of Cordyline for what are considered to be entirely valid reasons.

Up to the close of the last century comparatively little attention was given to the question of priority in the names of plants, and many authors accepted or changed generic and specific names at will. It is true that in a majority of cases names well established were generally accepted, but changes were often made for the most trivial reasons. In work prosecuted under these lax but easy methods of selecting names for plants, the exact identity of obscure species was a matter of relatively slight importance.

With the establishment and general acceptance of the principle of priority in selecting the names of species, it has become important, from the viewpoint of stability of nomenclature, to determine so far as possible the exact status of the species proposed by the older authors. It would admittedly be convenient if many of the names proposed by early authors could be discarded, but if we ignore the species of one author, any botanist at any time would be justified in likewise ignoring species proposed by any other author, which would result in a veritable chaotic condition in nomenclature. We can no longer look on the work of this or that author, no matter how incomplete or imperfect, as unworthy of consideration, nor can we accept Hooker's ‡ dictum, regarding species proposed by such authors as Blanco, that it was undesirable to devote time to their identification.

Regarding species based on such pre-Linnean works as Rheede's Hortus Malabaricus and Rumphius's Herbarium Amboinense, Hooker f. commends the work of Blume for the good service he has performed to the antiquarian branch of botany in interpreting Rumphian species. The general adoption of the principle of priority has emphasized the great importance of what Hooker f. characterized as the antiquarian branch of

^{*} Briquet, J. Regles internationales de la Nomenclature botanique adoptées par le Congres International de Botanique de Vienne 1905 (1906) 1-99.

[†] Actes du III ^{me} Congres International de Botanique, Bruxelles, 1910 1 (1910) 112-116.

[‡] Hooker f. & Thomson. Flora Indica 1 (1855) Introductory Essay 56.

botany, and while investigations of the status of binomials proposed by the early authors will lead to necessary changes in nomenclature, and changes in the accepted names of plants are always to be regretted, yet a strict interpretation of species from a historical standpoint will correct numerous current misapplications of names and lead to the assignment of these names to the forms for which their original authors intended them.

The strict application of the rule of priority as to the specific names has resulted in many changes in nomenclature, but these changes are unavoidable, if the international code be followed. Considering the distinctly basic position occupied by the Herbarium Amboinense in Malayan botany, the fact that so many binomials based wholly on Rumphius's work have been published by various authors, and the further fact that a high percentage of the "species" so established have been unintelligible to most botanists and have hence frequently been redescribed under other names, it is rather surprising that more changes in nomenclature have not been found necessary. The conservative botanist will be shocked to learn that as a result of the present investigation of the Herbarium Amboinense such common, widely distributed, and well-known species as the pineapple, the soy bean, the cow pea, and the pomelo must receive new specific names; that such names as Vigna luteola Sw., Canavalia turgida Grah., Pongamia glabra Vent., and others equally well known for the last hundred years or more fall as synonyms; and that in the true mangrove trees (Rhizophoraceae) the specific names in current use for most species are wrongly applied.

In proposing changes in nomenclature, I have not hesitated even when such well-known species as Glycine hispida, Ananas sativus, Citrus decumana, and Phaseolus unguiculatus are involved. While objections may be voiced to the changes in nomenclature herein proposed, while individual botanists may refuse to adopt the proposed changes, and while exceptions may be taken to some of my interpretations. I cannot understand why logically the changes proposed should not be generally adopted. Each case has been critically worked out from a historical standpoint, and the accepted name is that indicated by the International Code of Botanical Nomenclature now generally accepted by most botanists. To those botanists who make their own rules and in the matter of accepting or rejecting specific names are a law unto themselves, no appeal is made, for appeal I am firmly of the opinion, however, that stability in is useless.

nomenclature can come only by adhering to definite rules and by critically working out the proper name for each species in conformity with those rules.

In one matter affecting generic nomenclature I have definitely gone on record in a previous publication.* This is that the generic name should be maintained for the group for which it was intended by its original author, not applied to representatives of a group that was wholly unknown to the author of the generic name. Nauclea of Linnaeus serves as an illustration of the idea. As Nauclea is currently interpreted, it contains nothing that was originally placed there by Linnaeus. I have proposed to apply Nauclea in its original sense; that is, to the species currently placed in Sarcocephalus and have proposed the new name Neonauclea for Nauclea auctt., not of Linnaeus. It is to me inconceivable that a genus proposed by one author should be interpreted by others with every original species excluded. application of this principle to some of the older genera will involve an adjustment in such a case as Alpinia, for the type and sole species cited in the original description of Alpinia is a Renealmia.

As a natural consequence of the acceptance of the International Rules of Botanical Nomenclature, the numerous Rumphian names adopted by O. Kuntze † as substitutes for more "recent" generic names of other authors have been wholly ignored. It is perfectly evident that Rumphius had no idea of the "genus," and his names cannot be interpreted in a generic sense. Even in the Auctuarium, which was published after the binomial system was established, the "generic" names certainly cannot be considered as the equivalent of the genus as understood by contemporary The binomials that appear in the Auctuarium (1755) are merely accidental and cannot be considered as properly "published" binomial names; Burman in his added notes occasionally cites the first edition of Linnaeus's Species Plantarum. but he never cites the Linnean binomial, merely the descriptive sentence. It is perfectly clear that he had no intention of publishing the Rumphian accidental binomials as binomials in the Linnean sense. It is only in his Index Universalis that he recognized the Linnean system. In this he reduced to binomials those Rumphian species whose status had been determined by Linnaeus and by Stickman and proposed a few new binomials.

^{*} On the application of the generic name Nauclea of Linnaeus. Journ. Wash. Acad. Sci. 5 (1915) 530-642.

[†] Rev. Gen. Pl. (1891-93) CLV+1-1011.

OVERLOOKED BINOMIALS

During the course of my work on this project I have detected an unusually large number of binomials, over one hundred, that while validly published were overlooked in compiling the data for Index Kewensis and do not appear in that work or in any of its supplements. Some of these binomials appear in works that were never indexed, such as Stickman's Dissertation on the Herbarium Amboinense (1754); and in various other works based on the Herbarium Amboinense, such as those of Henschel and of Hasskarl; while others appear in works that were indexed, but for one reason or another certain species were overlooked. The list has been deemed to be of sufficient importance to warrant publication and is accordingly here presented.

- Achyranthes chinensis Osbeck Dagbok Ostind. Resa (1757) 205=? A. aspera Linn.
- Achyranthes spicifiora Burm. Index Alt. Herb. Amb. (1769) [5]=Acalypha amentacea Roxb.
- Afzelia rhomboidea F.-Vill. Novis. App. Fl. Filip. (1880) 72=Pahudia rhomboidea Prain.
- Allaeanthus luzonicus F.-Vill. Novis. App. Fl. Filip. (1880) 198. No combination in "Benth. et Hook. f. Gen. III. 361."
- Allophylus grossedentatus F.-Vill. Novis. App. Fl. Filip. (1880) 51 (Schmidelia grossedentata Turcz.).
- Alpinia rufa Naves Novis. App. Fl. Filip. (1880) 226 (Hellenia rufa Presl). Alpinia scabra Naves Novis. App. Fl. Filip. (1880) 226 (Hellenia scabra Blume).
- Amomum hatuanum Naves Novis. App. Fl. Filip. (1880) 224=? Amomum aculeatum Roxb.
- Anona sariffa Roxb. ex Henschel Vita Rumph. (1833) 142=Diospyros kaki
- Artocarpus fretisii Teysm. & Binn. ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 189.
- Aurantium maximum Burm. Index Univers. Herb. Amb. Auct. (1755)
 [16] = Citrus maxima (Burm.) Merr. (C. decumana Linn.).
- Bombax aculeatum Linn. Syst. ed. 10 (1759) 1141=Ceiba pentandra Gaertn.
- Breweria alsinoides F.-Vill. Novis. App. Fl. Filip. (1880) 143=Jacquemontia paniculata Hallier f.
- Briza elegans Osbeck Dagbok Ostind. Resa (1757) 246=? Eragrostis elegantula Steud.
- Bromelia comosa Linn. in Stickman Herb. Amb. (1754) 21; Amoen. Acad. 4 (1759) 130=Ananas comosus (Linn.) Merr. (A. sativus Schult. f.).
- Bulbophyllum carinatum Naves Novis. App. Fl. Filip. (1880) 235 (*Epidendrum carinatum* Linn.).
- Bulbophyllum purpureum Naves Novis. App. Fl. Filip. (1880) 234 (Sarcopodium purpureum Reichb. f.).

Bursera? nitida F.-Vill. Novis. App. Fl. Filip. (1880) 41 (Marignia nitida Turcz.) = Glycosmis cochinchinensis Pierre.

Cadamba nocturna Ham. ex Henschel Vita Rumph. (1833) 157=Nauclea undulata Roxb.

Caesalpinia jayabo Maza in Anal. Soc. Esp. Hist. Nat. 19 (1890) 234.

Canarium indicum Linn. Amoen. Acad. 4 (1759) 134 p. p.=Canarium commune Linn.

Canarium zephyrinum Blume Mus. Bot. 1 (1850) 217.

Caryophyllus silvestris Teysm. ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 167=Eugenia caryophyllata Thunb.

Caryota javanica Osbeck Dagbok Ostind. Resa (1757) 270=Ceratolobus javanicus (Osbeck) Merr. (C. glaucescens Blume).

Cassumbium spinosum Ham. ex Henschel Vita Rumph. (1833) 143—Schleichera oleosa (Lour.) Merr.

Catesbaea ? javanica Osbeck Dagbok Ostind. Resa (1757) 92=Clerodendron commersonii Spreng.

Citrus grandis Osbeck Dagbok Ostind. Resa (1757) 98=Citrus maxima (Burm.) Merr. (C. decumana Linn.).

Citrus limonia Osbeck Reise Ostind. China (1765) 250 (C. limonium Risso).

Citrus sinensis Osbeck Dagbok Ostind. Resa (1757) 250.

Codiaeum bractiferum Roxb. Fl. Ind. ed. 2, 3 (1832) 680.

Columnea chinensis Osbeck Dagbok Ostind. Resa (1757) 230=Limnophila chinensis (Osbeck) Merr. (L. hirsuta Benth.).

Commelina chinensis Osbeck Dagbok Ostind. Resa (1757) 242=Commelina nudiflora Linn.

Convallaria chinensis Osbeck Dagbok Ostind. Resa (1757) 219=Scilla chinensis Benth.

Convolvulus indicus Burm. Index Univers. Herb. Amb. Auct. (1755) [6] = Ipomoea indica (Burm.) Merr. (I. congesta R. Br.).

Cordia tiliaefolia Warb. in Rumphius Gedenkboek (1902) 78 (Rumphia amboinensis Linn., R. tiliaefolia Poir.).

Costus ananassae Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 333 = Tapeinochilus ananassae K. Schum.

Cryptanthus chinensis Osbeck Dagbok Ostind. Resa (1757) 277 (quid?). Cucumis rumphii Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 280=
Cucumis sativus Linn.

Curculigo rumphiana Schultes Syst. 7 (1830) 757=Curculigo orchoides Gaertn.

Cycas pectinata Ham. in Mem. Wern. Soc. 5 (1826) 322.

Dehaasia borneensis F.-Vill. Novis. App. Fl. Filip. (1880) 179 (Haasia borneensis Meisn.).

Desmodium cumingianum F.-Vill. Novis. App. Fl. Filip. (1880) 61 (Dendrolobium cumingianum Benth.

Dioscorea nummularifolia Henschel Vita Rump. (1833) 183 sphalm=D. nummularia Lam.

Donax canniformis K. Schum. in Engl. Bot. Jahrb. 15 (1893) 440.

Eleocharis dulcis Trin. ex Henschel Vita Rumph. (1833) 186.

Erndlia subpersonata Giseke Prael. Ord. Nat. Pl. (1792) 252=Curcuma longa Linn.

Eroteum lanigerum Blanco Fl. Filip. (1837) 440=Trichospermum lanigerum (Blanco) Merr. (T. trivalve Merr.).

Eugenia longiflora F.-Vill. Novis. App. Fl. Filip. (1880) 86 (Syzygium longiflorum Presl).

Fimbristylis cumingii F.-Vill. Novis. App. Fl. Filip. (1882) 308=Bulbostylis barbata Kunth.

Flindersia radulifera Spreng. Gesch. Bot. 2 (1818) 76 ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 206=Flindersia amboinensis Poir.

Govantesia maluluchan Llanos in Rev. Progr. Cienc. 15 (1865) 191=
Champereia manillana (Blume) Merr.

Guatteria rumphii Blume ex Henschel Vita Rumph. (1833) 153=Polyal-thia sp.

Habenaria cordata Naves Novis. App. Fl. Filip. (1880) 250, non R. Br.,=Habenaria diphylla Dalz.

Hapaloceras ? arupa Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) $193 = Payena\ leerii\ Kurz.$

Hibiscus convolvulaceus Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 74=Hibiscus surattensis Linn.

Hibiscus haenkeanus F.-Vill. Novis. App. Fl. Filip. (1880) 25=Abelmoschus haenkeanus Presl.

Homalium aranga Vidal ex F.-Vill. Novis. App. Fl. Filip. (1880) 94, in syn.=Homalium luzonicum F.-Vill.

Hypoestes cumingiana F.-Vill. Novis. App. Fl. Filip. (1880) 157. No combination in "Benth. et Hook. f. Gen. II. 122."

Ichnocarpus acuminatus F.-Vill. Novis. App. Fl. Filip. (1880) 131=
Aganosma acuminata G. Don.

Ichnocarpus macrocarpus F.-Vill. Novis. App. Fl. Filip. (1880) 131=Aganosma macrocarpa A. DC.

Ichnocarpus velutinus F.-Vill. Novis. App. Fl. Filip. (1880) 131=Aganosma velutina A. DC.

Lagerstroemia chinensis Linn. Amoen. Acad. 4 (1759) 137=Lagerstroemia indica Linn.

Lagurus paniculatus Linn. ex Burm. f. Fl. Ind. (1768) 30=Andropogon nardus Linn.

Legnotis lanceolata Blanco Fl. Filip. (1837) 445=Decaspermum paniculatum Kurz.

Macanea arborea Blanco Fl. Filip. (1837) 431=Alphonsea arborea (Blanco) Merr. (A. philippinensis Merr.).

Macrolobium amboinense Teysm. ex Hassk in Abh. Naturf. Gesellsch. Halle 9 (1866) 189=Intsia bijuga O. Kuntze.

Mangifera utana Ham. in Mem. Wern. Soc. 5 (1826) 326.

Medinilla lagunae Vidal ex F.-Vill. Novis. App. Fl. Filip. (1880) 89, descr.

Melaleuca trinervis Ham. ex Henschel Vita Rumph. (1833) 145=Melaleuca leucadendra Linn.

Melia parasitica Osbeck Dagbok Ostind. Resa (1757) 277=? Lansium domesticum Correa.

Mespilus sylvestris Burm. Index Univers. Herb. Amb. Auct. (1755) [14]=? Carissa carandas Linn.

Mespilus sylvestris Burm. Index Univers. Herb. Amb. Auct. (1755) [18] = Flacourtia indica (Burm.) Merr.

Milium zonatum Llanos Frag. Pl. Filip. (1851) 24=Eriochloa ramosa O. Kuntze.

Melochia indica A. Gray ex F.-Vill. Novis. App. Fl. Filip. (1880) 29= Melochia umbellata Stapf. Mimosa chinensis Osbeck Dagbok Ostind. Resa (1757) 233=Albizzia chinensis (Osbeck) Merr. (A. stipulata Boiv.).

Momordica indica Linn. in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 132=Momordica charantia Linn.

Monarda chinensis Osbeck Dagbok Ostind. Resa (1757) 240 (quid?).

Moringa domestica Ham. in Mem. Wern. Soc. 5 (1826) 268, 371=Moringa oleifera Lam.

Muntingia bartramia Linn. Amoen. Acad. 4 (1759) 124=Commersonia bartramia (Linn.) Merr. (C. platyphylla Anders.).

Murraya scandens Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 233=M. paniculata Jack.

Nauclea elegans Teysm. & Binn. ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 100=Anthocephalus macrophyllus Havil.

Negretia pruriens Blanco Fl. Filip. ed. 2 (1845) 441=Mucuna pruriens DC. Oberonia ancipita Naves Novis. App. Fl. Filip. (1880) 230 (sphalm! O. anceps Lindl.).

Octomeles moluccana Teysm. & Binn. ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 208=Octomeles sumatrana Miq.

Orchis lanigera Blanco Fl. Filip. (1837) 671=Rhynchosia retusa Blume.

Osmelia philippica F.-Vill. Novis. App. Fl. Filip. (1880) 93 (Stachycrater philippinus Turcz., Osmelia philippinensis Benth.).

Panax rumphii Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 78=
Nothopanax tricochleatum Miq.

Pancratium narbonense Linn. in Stickman Herb. Amb. (1754) 28=Eurycles amboinensis Lindl.

Panicum philippinum F.-Vill. Novis. App. Fl. Filip. (1882) 312=Axonopus semialatus Hook. f.

Panicum tuberosum Llanos Frag. Pl. Filip. (1851) 41=Panicum repens Linn.

Panicum vulpinum Linn. Amoen. Acad. 4 (1759) 134=Setaria flava Kunth. Pepo indicus Burm. Index Univers. Herb. Amb. Auct. 7 (1755) [6]=Cucurbita pepo Linn.

Phaseolus cylindricus Linn. Amoen. Acad. 4 (1759) 132—Vigna cylindrica (Linn.) Merr.

Pholidocarpus rumphii Meisn. ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 12=Pholidocarpus ihur Blume.

Phytolacca? javanica Osbeck Dagbok Ostind. Resa (1757) 276=Terminalia catappa Linn.

Pimelandra disticha F.-Vill. Novis. App. Fl. Filip. (1880) 123=Ardisia disticha A. DC.

Platanthera horsfieldii Naves Novis. App. Fl. Filip. (1880) 251 (Peristylus gracilis Blume).

Plumbago indica Linn. in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 133 (P. rosea Linn., 1762).

Polyscias cumingiana F.-Vill. Novis. App. Fl. Filp. (1880) 102 (Paratropia cumingiana Presl).

Pterocaulon redolens F.-Vill. Novis. App. (1880) 116.

Pycnanthemum decurrens Blanco Fl. Filip. ed. 2 (1845) 333=Hyptis capitata Jacq.

Randia racemosa F.-Vill. Novis. App. Fl. Filip. (1880) 108 (Stylocoryne racemosa Cav.).

Ratonia montana F. Vill. Novis. App. Fl. Filip. (1880) 52=Arytera montana Blume.

Ratonia rufescens F.-Vill. Novis. App. Fl. Filip. (1880) 52 (Zygolepis rufescens Turcz.) = Arytera litoralis Blume.

Rhizophora longissima Blanco Fl. Filip. (1837) 278=R. mucronata Lam. Ricinus ruber Miq. Fl. Ind. Bat. 1 2 (1858) 390=Ricinus communis Linn. Samyda trivalvis Blanco Fl. Filip. (1837) 374=Casearia.

Sarcochilus centipeda Naves Novis. App. Fl. Filip. (1880) 238 (Thrixspermum centipeda Lour.).

Sarcochilus tenuifolius Naves Novis. App. Fl. Filip. (1880) 238 (Epidendrum tenuifolium Linn.).

Saurauia elegans F.-Vill. Novis. App. Fl. Filip. (1880) 19 (Scapha elegans Choisy, Saurauia rugosa Turcz.).

Solidago chinensis Osbeck Dagbok Ostind. Resa (1757) 241=Wedelia calendulacea Less.

Spermacoce discolor F.-Vill. Novis. App. Fl. Filip. (1880) 113 (Borreria discolor DC.).

Tapeinochilus ananassae K. Schum. in Engl. Bot. Jahrb. 27 (1899) 249.

Tetradapa javanorum Osbeck Dagbok Ostind. Resa (1757) 93=Erythrina indica Lam.

Timonius nitidus F.-Vill. Novis. App. Fl. Filip. (1880) 109 (Petesia nitida Bartl.).

Timonius ternifolius F.-Vill. Novis. App. Fl. Filip. (1880) 109 (Petesia ternifolia Bartl.).

Torenia glabra Osbeck Dagbok Ostind. Resa (1757) 210 (Torenia benthamiana Hance).

Tragia scandens Linn. in Stickman Herb. Amb. (1754) 12, Amoen. Acad. 4 (1759) 128=Tetracera scandens (Linn.) Merr. (Tetracera sarmentosa Vahl.

Tylophora bifida F.-Vill. Novis. App. Fl. Filip. (1880) 134 (Oxystelma bifidum Llanos).

Vallisneria sphaerocarpa Blanco Fl. Filip. (1837) 780=Enhalus acoroides Steud.

Varneria augusta Linn. Amoen. 4 (1759) 136=Gardenia augusta (Linn.) Merr. (G. florida Linn.).

Verbesina aquatica Burm. Index Alt. Herb. Amb. (1769) [18] = Wedelia biflora DC.

Zizyphus littorea Teysm. ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 176=Ximenia americana Linn.

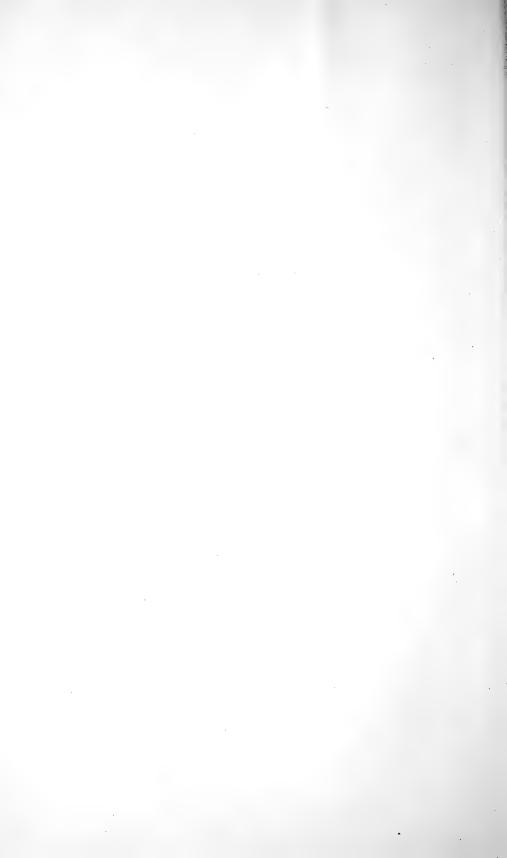
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We are under great obligations to the Dutch colonial officials for various courtesies extended to Doctor Robinson, but more especially are we indebted to Dr. J. C. Koningsberger, director of the botanic garden at Buitenzorg, Java, and to Dr. J. J. Smith of the same institution for their interest in the Amboina project and their hearty coöperation. Through their interest Doctor Robinson was supplied with a copy of the Herbarium Amboinense for his use during the period of his field work in Amboina, with a portion of his field equipment, and with the services of the *mantri* Mardjoeki, a Javanese assistant, who aided in the field work and had general oversight of the

drying of all material collected. I am also indebted to Doctor Koningsberger for the original map of Amboina, on which the one presented herewith was based, and for numerous specimens representing species not available in Manila, but which it was desirable to examine.

Assistance has been had from several specialists in the preparation of this report. The treatment of the Marantaceae. of the Zingiberaceae, and of Heliconia, in the Musaceae, as presented in this work, is that of Doctor Th. Valeton: the Orchidaceae is the work of Doctor J. J. Smith. The other groups have been worked up by me, but I have had the assistance of various specialists in certain families. The Pteridophyta have been determined by Captain C. R. W. K. van Alderwereldt van Rosenburg, of Buitenzorg.* The Pandanaceae were determined by Doctor U. Martelli, Florence, Italy; the Palmae by Doctor O. Beccari, Florence, Italy; the Bambusae by J. Sykes Gamble, esq., East Liss, England; the Piperaceae by Mr. C. de Candolle, Geneva, Switzerland; and the Sapindaceae by Doctor L. Radlkofer, Munich, Germany, Doctor Th. Valeton has assisted me in the identification of the Rubiaceae, while Mr. F. S. Collins, North Eastham, Massachusetts, has identified the algae and has kindly supplied me with extracts from books not available in Manila regarding the Rumphian species of this group. Mr. I. H. Burkill, director of the Botanic Garden, Singapore, has supplied me with critical notes regarding Dioscoreaceae. To Doctor Walter T. Swingle, Washington, D. C., I am indebted for a photostat copy of Burman's "Index alter," a work not available in Manila and of which I was unable to secure a copy; to Mr. F. V. Coville, Mr. P. L. Richer, and Mr. S. C. Stuntz, of the United States Department of Agriculture, I am indebted for typewritten or photostat copies of numerous original descriptions not available in Manila; to Doctor George T. Moore, director of the Missouri Botanical Garden, St. Louis, Missouri, for the loan of certain books; to Sir David Prain and Mr. A. W. Hill, of the Kew gardens, London, England, and to Doctor A. B. Rendle, of the British Museum, for copies of descriptions and for critical notes on various type specimens. all of these gentlemen I wish to express my thanks for assistance rendered, without which the present consideration of the Rumphian species must of necessity have been less complete and more inexact than it is.

^{*} The Amboina Pteridophyta collected by C. B. Robinson. *Philip. Journ. Sci.* 11 (1916) *Bot.* 101–123, t. 5, 6.



SYSTEMATIC ENUMERATION

THALLOPHYTA

Rumphius described a small number of thallophytes, and fortunately but few of the forms he described and figured have been made the types of species under the binomial system. The algae are represented by some of the more prominent forms, such as Sargassum, Turbinaria, and a few of the Rhodophuceae. but, in all, Rumphius characterized and named only about a dozen species of this group; none of these have been made the types of species under the binomial system. Of the fungi more numerous forms were described and figured, about twenty-five being characterized. Some of these are wholly unrecognizable from the descriptions alone, while the identity of others is perfectly About ten of the forms Rumphius described have been made the types of species under the binomial system, most of these binomials typified by Rumphius's figures and descriptions being proposed by Fries. In the lichens but two forms were described; both are apparently referable to Usnea.

In the *Bryophyta* not a single species was described, unless some of the pendant epiphytic mosses and hepatics were included in the rather generalized description of *Muscus capillaris* Rumph. Herb. Amb. 6:89, t. 40, f. 2; the figure, and the description at least for the most part, refers to *Usnea* rather than to any of the bryophytes.

ALGAE *

CHLOROPHYCEAE

CHAETOMORPHA Kützing

CHAETOMORPHA JAVANICA Kütz.

Capillus nympharum Rumph. Herb. Amb. 6: 90, 179.

Rumphius's description applies to *Chaetomorpha*, but the form he had might be either *C. javanica* Kütz. or the allied *C. brachygona* Harv. (Ayer putri, *Rel. Robins. 2393*, locally known as *lumu-lumu*), which Doctor Robinson states is "not unlikely *Capillus nympharum*." Martens states that it is an "Algen aus

^{*} In the following consideration of the algae described by Rumphius, the reductions in general follow G. von Martens in Die Preussische Expedition nach Ost-Asien. Botanische Theil. Die Tange (1866-68) 1-152, t. 1-8. I am indebted to Mr. F. S. Collins, of North Eastham, Massachusetts, for copies of passages in Martens's work pertaining to the Herbarium Amboinense and for identifying the Amboina algae collected by Doctor Robinson.

der Familie Conferven und, der Localität nach zu schleissen, zunächt *Chaetomorpha javanica* Kütz., welche mein Sohn an der angegebene Stelle weider gesamelt hat."

RHODOPHYCEAE

GELIDIUM Lamouroux

GELIDIUM AMANSII Kütz.

Muscus gelatinus japponensis Rumph. Herb. Amb. 6: 90.

In the text, page 88, t. 40, f. 3, is referred to Muscus gelatinus japponensis, and this figure is placed with the description by Hasskarl, Neue Schlüssel (1866) 167; to me the figure looks distinctly like Gracilaria lichenoides (Linn.) Harv. Martens refers the figure to Chaetomorpha javanica Kütz., where it certainly does not belong. Henschel referred the description and the figure to Sphaerococcus gelatinus Ag., while Hasskarl suggested that both might be referable to Eucheuma spinosum Ag. Martens states that the species, as described, "ist sicher das von Siebold aus Japan mitgebracht Gelidium Amansii Kütz., aber Rumph. scheint verschiedene andere heterogene Gegenstände nicht gehörig davon zu unterscheiden."

HIMANTHALIA Lyngbye

HIMANTHALIA LOREA (Linn.) Lyngb.

Bodelha altera Rumph. Herb. Amb. 6: 187.

This is scarcely more than mentioned by Rumphius as growing on the coasts of Spain and Portugal. The reduction follows Martens.

GRACILARIA Greville

GRACILARIA LICHENOIDES (Linn.) Harv.

Sphaerococcus lichenoides Ag.

Alga coralloides I Rumph. Herb. Amb. 6: 181, t. 74, f. 3, t. 76, f. A-C. Amboina, Hitoe lama, Robinson Pl. Rumph. Amb. 573, November 5, 1913, on coral in shallow water.

Loureiro, Fl. Cochinch. (1790) 686, referred this to Lichen rocella Lour., which is an entirely erroneous disposition of it, whatever Loureiro's species may prove to be. It has been referred by various authors to Fucus edulis Gmel. and to Sphaerococcus lichenoides Agardh, the former a synonym of the latter. Martens considers it to be Sphaerococcus lichenoides Agardh—Gracilaria lichenoides Harv. The illustration given on t. 40, f. 3, referred in the text to Muscus gelatinus japponensis, and by Martens referred to Capillus nympharum Rumph.—Chaetomorpha javanica Kütz., very much better agrees with named

specimens of *Gracilaria lichenoides* (Linn.) Harv., than do the figures cited above, t. 74, f. 3, t. 76, f. A-C.

PHAEOPHYCEAE

SARGASSUM Agardh

SARGASSUM POLYCYSTUM J. Ag.

Acetabulum marinum Rumph. Herb. Amb. 6: 185, t. 76, f. 1.

This was referred by Burman f., Fl. Ind. (1768) 239, to Fucus natans Linn., where it manifestly does not belong; Henschel referred it to Sargassum amboinicum "Rumph."; and Hasskarl, Neue Schlüssel (1866) 181, placed it under Sargassum myriocystum J. Ag. The present reduction follows Martens.

SARGASSUM BACCIFERUM Ag.

Sargassum pelagicum Rumph. Herb. Amb. 6: 188, t, 76 f. 2.

Linnaeus originally reduced this to Fucus natans Linn., in Stickman Herb. Amb. (1754) 28, Amoen. Acad. 4 (1759) 136, Syst. ed. 10 (1759) 1345; Burman f., Fl. Ind. (1768) 239, placed it under Fucus granulatus Linn.; and Henschel placed it under Sargassum bacciferum Agardh, where it properly belongs. The only forms of Sargassum collected by Doctor Robinson in Amboina are referable to S. binderi Sonder.

SARGASSUM AQUIFOLIUM (Turn.) J. Ag.

Agarum III funiculare s. foliatum Rumph. Herb. Amb. 6: 186.

In the very short description given by Rumphius three distinct forms are mentioned and casually described. According to Martens the first one is *Carpacanthus herbaceus* Kütz.—*Sargassum aquifolium* J. Ag. He suggests that the other forms may be referable to *Sargassum granuliferum* Agardh.

SARGASSUM FLAVIFOLIUM Kütz.

Sargasso s. Wier Rumph. Herb. Amb. 6: 167.

This is briefly mentioned as growing along the coasts of Spain and Portugal. The reduction follows Martens.

TURBINARIA Lamouroux

TURBINARIA ORNATA (Turn.) J. Ag.

Acetabulum marinum infundibuliforme Rumph. Herb. Amb. 6: 185.

Amboina, Paso, Robinson, Pl. Rumph. Amb. 576, October 29, 1913, washed ashore, locally known as arien.

Henschel placed this under Sargassum turbinatum Agardh, but Hasskarl, Neue Schlüssel (1866) 181, and Martens placed

it under *Turbinaria ornata* (Turn.) J. Ag., quoting J. Agardh Sp. Alg. 1: 266. This is manifestly the correct disposition of it.

TURBINARIA sp.?

Acetabulum marinum e Macassar Rumph. Herb. Amb. 6: 186.

Hasskarl, Neue Schlüssel (1866) 181, thought that this might be referable to *Turbinaria vulgaris* J. Ag., var *conoidea* J. Ag., but Martens expresses the opinion that it might perhaps be the same as *Chauvinia macrophysa* Kütz.=*Caulerpa racemosa* var. *clavifera* forma *macrophysa* (Kütz.) Weber. The description is very short and indefinite.

FUCUS Linnaeus

FUCUS VESICULOSUS Linn.

Bodelha Rumph. Herb. Amb. 6: 187.

The common rock weed is briefly mentioned by Rumphius as growing on the coasts of Spain and Portugal.

MASTOCARPUS Kützing

MASTOCARPUS KLENZEANUS Kütz.

Agarum II s. bracteatum Rumph. Herb. Amb. 6: 186.

Henschel referred this to *Fucus bracteatus* Ag., where it certainly does not belong. Martens considers that it is certainly referable to *Mastocarpus klenzeanus* Kütz.

ALGAE OF ENTIRELY DOUBTFUL STATUS

Alga coralloides sinensium Rumph. Herb. Amb. 6: 90.

This is scarcely more than casually mentioned, and the identity of the plant intended is entirely problematical, other than that it is a marine alga.

Agarum lactucarium Rumph. Herb. Amb. 6: 186.

The brief description includes several entirely different forms of Rhodo-phyceae, none of which are certainly determinable. Martens suggests that the last mentioned may be $Hypnea\ divaricata\ J.\ Ag.$

Agarum corticosum Rumph. Herb. Amb. 6: 187.

This is wholly indeterminable from data at present available, and no author has as yet suggested a possible reduction of it. The description is very brief and imperfect.

FUNGI

LENTINUS Fries

LENTINUS SAJOR CAJU Fries Epicr. (1836-38) 393 (type!).

Agaricus sajor caju Fries Syst. 1 (1821) 175 (type!).

Boletus primus infundibuli forma [figura] Rumph. Herb. Amb. 6: 125, t. 56, f. 1.

Amboina, Gelala, Robinson Pl. Rumph. Amb. 571, September 19, 1913, on old tree trunks, altitude about 175 meters.

FUNGI 57

The Rumphian figure and description are the whole basis of Lentinus sajor caju Fries, the species apparently having been generally interpreted correctly, as the figure is quite characteristic. Philippine material referred by Bresadola to Lentinus sajor caju differs but slightly from the Amboina specimen cited above. The form briefly described in the second paragraph, indicated by Hasskarl as forma altera varietas, while undoubtedly a Lentinus, may or may not be the same as Lentinus sajor caju Fries.

LENTINUS TUBER REGIUM Fries Epicr. (1836-38) 392 (type!); Saccardo Syll. Fung. 1 (1887) 604.

Agaricus tuber regium Fries Syst. 1 (1821) 174 (type!).

Tuber regium Rumph, Herb. Amb. 6: 120, t. 57, f. 4 (cf. Pachyma tuber regium Fries p. 61).

A species imperfectly understood, based wholly on Rumphius's figure and description, although perhaps correctly interpreted by Hennings.* The subterranean portion of *Tuber regium*, as figured and described by Rumphius, is *Pachyma tuber regium* Fries, a species of wholly doubtful status (see p. 61), and is apparently nothing but a pseudo-sclerotium of *Lentinus tuber regium* Fries.†

LENTINUS DJAMOR Fries Epicr. (1836-38) 395 (type!).

Agaricus djamor Fries Syst. 1 (1821) 185 (type!).

Boletus II arboreus Rumph. Herb. Amb. 6: 125, t. 56, f. 2, 3.

A species known only from Rumphius's description and rather crude figures, but probably correctly placed in the genus Lentinus.

MARASMIUS Fries

MARASMIUS sp.

Cassutha cornea Rumph. Herb. Amb. 7: 52.

Rumphius's description applies to a plant that can hardly be other than the mycelium of one of the horsehair blights, *Marasmius* sp., for a general consideration of which see Petch.‡ Burman f., Fl. Ind. (1768) 93, referred it to *Cassytha corniculata* Burm. f., a species described and figured from Javan specimens, and which is perhaps a species of *Galeola* of the *Orchidaceae*. Linnaeus, Mant. 2 (1771) 237, repeats Burman's description under *Cassyta corniculata*, the reduction being cited by Loureiro, Murray, Lamarck, and Willdenow. Miquel, Fl. Ind. Bat. 1¹

^{*} Engl. & Prantl. Nat. Pflanzenfam. 1¹: 225; see Lloyd, Myc. Notes 47 (1917) 666, fig. 959.

[†] See Petch, T. The Pseudo-sclerotia of Lentinus similis and Lentinus infundibuliformis. Ann. Bot. Gard. Peradeniya 6 (1915) 1-17, t. 1.

[‡] Horse-hair blights. Ann. Bot. Gard. Peradeniya 6 (1915) 43-68, t. 2-7.

(1858) 977, correctly excluded *Cassytha corniculata* Burm. f. from the *Lauraceae*. Hasskarl, Neue Schlüssel (1866) 191, states: "Mihi *Rhizomorpha* aut *Mycelium* fungi cujusdam esse videtur."

GANODERMA Karsten

GANODERMA AMBOINENSE (Lam.) Pat. in Bull. Soc. Bot. Fr. 5 (1889) 70.

Agaricus amboinensis Lam. Encycl. 1 (1783) 51 (type!).

Polyporus amboinensis Fries Syst. Mycol. 1 (1821) 354 (type!).

Fomes amboinensis Fries Epicr. (1836-38) 442 (type!).

Fungus elatus cochlearis Rumph. Herb. Amb. 6: 129, t. 57, f. 1.

Amboina, Hitoe messen, Robinson Pl. Rumph. Amb. 572, altitude about 400 meters.

The Rumphian figure and description are the whole basis of all the synonyms cited above. This is not Ganoderma amboinense (Lam.) Pat. as currently interpreted, but is apparently a form of Ganoderma rugosum (Bl. & Nees) Bres. In this connection it is to be noted that Rumphius figures Fungus elatus cochlearis with a long stipe and definitely states regarding it: "petiolo longo & tenui, spithamam vel pedam circiter longo," which includes no character of Ganoderma amboinense as currently interpreted. The figure shows a specimen with a lateral pileus, while Ganoderma rugosum Bres. usually has a central stipe. Of Robinson's material, cited above, one specimen has a central stipe, and one, the pileus injured, has a lateral stipe. I have little hesitation in interpreting true Ganoderma amboinense (Lam.) Pat. as the form currently known as Ganoderma rugosum Bres. From this I do not think that Fungus elatus primus Rumph. and Fungus elatus petasoides Rumph., described in the preceding paragraph, can be distinguished.

GANODERMA COCHLEAR (Nees) comb. nov.

Polyporus cochlear Nees in Nov. Act. Acad. Nat. Cur. 13: 20, t. 6. Ganoderma amboinense auct. plur., non Agaricus amboinensis Lam., nec Polyporus vel Fomes amboinensis Fries.

Fungus elatus digitatus Rumph. Herb. Amb. 6: 129, t. 57, f. 2, 3, et, s. n., t. 57, f. E.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 610, August 30, 1913, on dead trees at low altitudes.

It is very evident from an examination of the original descriptions that *Ganoderma amboinense* Pat. has been wrongly interpreted by recent authors—Patouillard, Murrill, Sydow, and Bresadola—for the Rumphian figure and description, on which *Ganoderma amboinense* is based, is undoubtedly the form currently known as *Ganoderma rugosum* Bres. I am of the

FUNGI 59

opinion, however, that t. 57, f. 2, 3, represent juvenile forms of a Ganoderma, probably G. cochlear as here interpreted, and that figure E, described by Burman as "tam cochlearis, quam digitati species est ex utrisque mixta," belongs with Ganoderma cochlear (Nees) Merr.; that is, it is Ganoderma amboinense auct., non (Lam.) Pat. Lamarck considered figures 2 and 3 to represent a variety of his Agaricus amboinensis. Loureiro, Fl. Cochinch. (1790) 694, erroneously reduced these figures to Helvella mitra Linn., which is a totally different plant. It is not certain whether or not Polyporus pisachapanni Nees is distinct from Ganoderma cochlear (Nees) Merr.

FAVOLUS Fries

FAVOLUS sp.

Fungus arboreus III Rumph. Herb. Amb. 6: 128.

The description is unmistakably referable to *Favolus* or some very closely allied genus, such as *Hexagonia*, as indicated by the brief description of the lower surface as "subtus autem in varias cellulas & tessaras distincta est instar favorum Apium."

POLYSTICTUS Fries

POLYSTICTUS SANGUINEUS (Linn.) Nees in Mey. Prim. Fl. Esseq. (1818) 304.

Boletus sanguineus Linn. Sp. Pl. ed. 2 (1763) 1646. Fungus arboreus II (ruber) Rumph. Herb. Amb. 6: 128.

The phrase "utrimque rubra," together with the few other characters given in the very short description, definitely refers the form Rumphius described to the strongly marked *Polystictus sanguineus* Nees.

POLYPORUS Micheli

POLYPORUS sp.

Fungus arboreus II (albus) Rumph. Herb. Amb. 6: 128.

The brief description applies to *Polyporus* or to one of the very closely allied genera. There is nothing sufficiently definite in the description to warrant even a guess at its identity.

POLYPORUS sp.

Fungus arboreus I Rumph. Herb. Amb. 6: 127.

Indeterminable from the data given by Rumphius, other than that it is referable to *Polyporus*, sensu latiore, or to one of the very closely allied genera that have been segregated from it. Both *Polyporus lucidus* Fries and *P. amboinensis* Fries=*Ganoderma amboinense* Pat. have been suggested for the Rumphian species.

AGARICUS Linnaeus

AGARICUS MOSCHOCARYANUS Streinz Nomencl. Fung. (1861) 70 (type!).

Boletus moschocaryanus Rosenthal Syn. Pl. Diaphor. (1862) 31 (type!).

Boletus moschocaryanus Rumph. Herb. Amb. 6: 124.

From Rumphius's description this can scarcely be an *Agaricus*, but is more probably a *Lentinus*. Rumphius describes it as an edible fungus growing on *Myristica* trees. Its status as a species is quite unknown.

HIRNEOLA Fries

HIRNEOLA AURICULA JUDAE (Fries) Berk. Outl. (1860) 289.

Tremella auricula Linn. Sp. Pl. (1753) 1157.

Exidia auricula judae Fries Syst. 2 (1823) 221.

Boletus V auris murina Rumph. Herb. Amb. 6: 126, t. 56, f. 4.

This was placed by Loureiro, Fl. Cochinch. (1790) 695, under *Peziza auricula* Lour. It can scarcely be other than the common and widely distributed *Hirneola auricula judae* Berk.

AGARICACEAE sp.

Boletus saguarius Rumph. Herb. Amb. 6:124.

The genus of this is uncertain, but it manifestly belongs in the *Agaricaceae*. Rumphius describes it as edible and as growing on the decaying waste from the trunks of sago palms from which the sago has been extracted.

AGARICACEAE sp.

Boletus II umbraculiforma Rumph. Herb. Amb. 6: 126.

All that can be said regarding this form is that it belongs in the *Agaricaceae*, possibly in the genus *Agaricus*. It is one of the edible forms.

AGARICACEAE sp.

Boletus IV terrestris Rumph. Herb. Amb. 6: 126.

Of wholly doubtful status other than that it belongs in the *Agaricaceae*.

AGARICACEAE sp.

Fungus igneus Rumph. Herb. Amb. 6:130, t. 56, f. 5.

The description is not sufficiently definite to warrant even a guess as to the genus the plant pertains to, and the figure is very poor. It is nonedible and is stated by Rumphius to be poisonous.

LYCOPERDON Tournefort

LYCOPERDON sp.

Crepitus lupi verus Rumph. Herb. Amb. 6: 131.

FUNGI 61

Lycoperdon is the suggested reduction of this by Hasskarl, which may be the correct disposition of it. Fungus arborum tuberosus Rumph., Herb. Amb. 6: 130, also may be possibly referable to the same genus. Beyond a surmise as to the genus, no further reduction can be suggested from data at present available.

DICTYOPHORA Desvaux

DICTYOPHORA PHALLOIDEA Desv. Journ. Bot. 2 (1809) 88.

Hymenophallus indusiatus Vent. in Mém. Inst. Nat. Sci. 1 (1789) 520.

Phallus daemonum Fries Syst. Mycol. 2 (1823) 283 (type!).

Hymenophallus daemonum Spreng. Syst. 4 (1827) 498 (type!).

Dictyophora speciosa Klotzsch. in Nov. Act. Acad. Nat. Cur. 19 (1843) Suppl. 1: 239, t. 6.

Phallus daemonum Rumph. Herb. Amb. 3: 218; 6: 131, t. 56, f. 7.

The Rumphian figure is the type of *Phallus daemonum* Fries and of *Hymenophallus daemonum* Spreng., and it is certainly the same as *Dictyophora phalloidea* Desv. Loureiro, Fl. Cochinch. (1790) 694, erroneously reduced it to *Phallus impudicus* Linn. Ventenat's specific name is the oldest one, but no change is here proposed in the nomenclature of the species.

POLYGASTER Fries

POLYGASTER SAMPADARIUS Fries Syst. Mycol. 2 (1823) 295 (type!). Tuber sampadarium Rumph. Herb. Amb. 6: 123.

Loureiro, Fl. Cochinch. (1790) 697, referred *Tuber sampadarium* Rumph. to *Lycoperdon glomeratum* Lour., a species based on Cochin-China specimens. There is no evidence that the form Loureiro described is the same as the one Rumphius considered. The Rumphian description typifies *Polygaster sampadarius* Fries, a species of very doubtful status. Fischer, in Engler & Prantl Nat. Pflanzenfam. 1¹ ** (1899) 399, places *Polygaster* as a doubtful genus under the *Plectobasidiineae* (*Sclerodermineae*).

PACHYMA Fries

PACHYMA TUBER REGIUM Fries Syst. Mycol. 2 (1823) 243 (type!). Tuber regium Rumph. Herb. Amb. 6: 120, t. 57, f. 4.

The genus *Pachyma* Fries is one of doubtful status, although there is little doubt that *Pachyma tuber regium* Fries is nothing but a pseudo-sclerotium of *Lentinus tuber regium* Fries (see *Lentinus tuber regium* Fries, p. 57).

PACHYMA HOELEN Fries Syst. Mycol. 2 (1823) 243 (type!). Hoelen Rumph. Herb. Amb. 6: 122.

Rumphius's description of Hoelen was based on material originating in China. It is the whole basis of Pachyma hoelen Fries and, like *Pachyma tuber regium* Fries, is of doubtful status. It is cultivated on pine trees in various parts of China* and has been referred to Pachyma cocos Fries. Specimens of fulin. kindly secured for me by Mr. W. J. Tutcher in a Chinese drug store in Hongkong, agree closely with the excellent figures of Pachyma cocos Fries given by Currey in Trans. Linn. Soc. 23 (1860) t. 10, f. 5, 6, 9. A part of Mr. Tutcher's specimen was sent to Dr. W. A. Murrill, of the New York Botanical Garden, who states that he has sclerotia of the same general type from different localities in America, but that the only method of distinguishing them accurately is to develop the fruiting form. In some cases the fruiting form proves to be species of *Polyporus*, in others species of Lentinus. He expresses the opinion that Pachuma hoelen Fries is distinct from P. cocos Fries.

FUNGUS indet.

Muscus frutescens III muscagineus Rumph. Herb. Amb. 6:87.

The description apparently applies to the mycelium of some fungus, but the status of *Muscus frutescens muscagineus* is wholly indeterminable.

LICHENES

USNEA Linnaeus

USNEA sp.

Barba saturni Rumph. Herb. Amb. 6:88.

Henschel thought that this might be a species of *Lycopodium*, which is an impossible reduction of it. Hasskarl, Neue Schlüssel (1866) 167, states "Usneae aut gen. aff. Lichenum spec. quaedam." The form described is probably an Usnea.

USNEA sp.

Muscus capillaris Rumph. Herb. Amb. 6:89, t. 40, f. 2.

Linnaeus, in Stickman Herb. Amb. (1754) 27, Amoen. Acad. 4 (1759) 135, Syst. ed. 10 (1759) 975, erroneously reduced this to Renealmia usneoides Linn., which is the American Tillandsia usneoides Linn., of the Bromeliaceae. Burman f., Fl. Ind. (1768) 239, cites it under Lichen capillaris Burm. f., of which, however, it is scarcely the type. Loureiro, Fl. Cochinch. (1790) 171, discusses it under Grammica aphylla Lour.—Cuscuta chinensis Lam. and definitely refers it, op. cit. 687, to Lichen usnea Linn. Rumphius's description perhaps includes more than an Usnea,

^{*} Shaw, N. Chinese Forest Trees and Timber Supply (1914) 39, 295.

possibly pendant epiphytic mosses and hepatics, but his figure, and his description at least in most part, apparently refers to *Usnea* or to some very closely allied genus. His material was from the higher mountains of the interior of Amboina.

PTERIDOPHYTA

The entire Amboina collection of this group, made by Doctor Robinson, has been critically studied by Capt. C. R. W. K. van Alderwerelt van Rosenburgh, of Buitenzorg, Java.* In preparing the present consideration of the species described by Rumphius I have had the benefit of his published work, both as to the names of the various species under the binomial system, and as to the identity of the forms Rumphius named and described. In a few cases I have made changes in nomenclature, but in no case, except *Cyathea*, involving new combinations.

CYATHEACEAE

CYATHEA Smith

CYATHEA RUMPHIANA (v. A. v. R.) comb. nov.

Alsophila rumphiana v. A. v. R. in Philip. Journ. Sci. 11 (1916) Bot. 104.

Palmifilix alba Rumph. Herb. Amb. 6: 63.

AMBOINA, Hitoe messen, Robinson Pl. Rumph. Amb. 463, October 14, 1913, in light forests, altitude about 175 meters.

Doctor Robinson, who had the opportunity of examining this tree fern in the field and of making a direct comparison with Rumphius's description, considers this identification of *Palmifilix alba* Rumph. as certain.

CYATHEA AMBOINENSIS (v. A. v. R.) comb. nov.

Alsophila amboinensis v. A. v. R. in Philip. Journ. Sci. 11 (1916) Bot. 103.

Palmifilix nigra Rumph. Herb. Amb. 6: 63 (t. 27?).

Amboina, Hatiwe and Soja, Robinson Pl. Rumph. Amb. 464, 465, August and September, 1913, in forests, altitude 300 to 400 meters.

The only previously suggested reduction of *Palmiflix nigra* Rumph. is that of Henschel and Pritzel, who referred it to *Cyathea arborea* Sm., a species of tropical America. The reduction made here is probably the correct disposition of *Palmiflix nigra* Rumph. The illustration, however, may belong to any one of the three forms described in this chapter, the particular one intended not being indicated by Rumphius.

^{*} The Amboina Pteridophyta collected by C. B. Robinson. *Philip. Journ. Sci.* 11 (1916) *Bot.* 101-123, t. 5, 6.

CYATHEA sp.

Palmifilix postium Rumph. Herb. Amb. 6: 63.

Manifestly one of the tree ferns and probably a *Cuathea*. exact status cannot be determined from any data at present available.

POLYPODIACEAE

DRYOPTERIS Adanson

DRYOPTERIS FEROX (Blume) O. Kuntze Rev. Gen. Pl. 2 (1891) 812.

Aspidium ferox Blume Enum. Pl. Jav. (1828) 153. Filix amboinica mas Rumph. Herb. Amb. 6:69.

AMBOINA, Robinson Pl. Rumph. Amb. 439, July 23, 1913, on river banks in the vicinity of the town of Amboina.

This reduction of Filix amboinica mas is certainly correct, the species being a strongly marked and characteristic one and Rumphius's description agreeing closely with it.

TECTARIA Cavanilles

(Aspidium Swartz)

TECTARIA CRENATA Cav. Descr. (1802) 250.

Aspidium repandum Willd. Sp. Pl. 5 (1810) 216.

Lonchitis amboinica recta Rumph. Herb. Amb. 6: 70.

Amboina, Soja, Robinson Pl. Rumph. Amb. 447, August 2, 1913, altitude about 250 meters.

This is probably the correct disposition of the plant Rumphius briefly described.

STENOSEMIA Presl

STENOSEMIA AURITA (Sw.) Presl Tent. Pterid. (1836) 237.

Acrostichum auritum Sw. in Schrad. Journ. 1800° (1801) 12. Filix florida Rumph. Herb. Amb. 6: 78, t. 35, f. 1.

AMBOINA, Way uri, Robinson Pl. Rumph. Amb. 444, September 9, 1913,

in river bottoms at low altitudes.

This reduction was made by Willdenow, Sp. Pl. 5 (1810) 112, as Acrostichum auritum Sw. It has been cited under Polybotrua aurita Blume and Acrostichum floridum Poir., both of which are synonyms of Stenosemia aurita Presl.

DAVALLIA Smith

DAVALLIA ELATA (Forst.) Spreng. in Schrad. Journ. 1799² (1799) 271.

Trichomanes elatum Forst. Prodr. (1786) 85.

Dryopteris triplex arborea Rumph. Herb. Amb. 6: 73, t. 32, f. 1.

AMBOINA, Ayer putri, Robinson Pl. Rumph. Amb. 449, July 28, 1913, on trees at low altitudes.

Very closely allied to *Davallia denticulata* (Burm. f.) Mett., but considered by van Alderwereldt van Rosenburgh to be specifically distinct; see Philip. Journ. Sci. 11 (1916) Bot. 108.

TAPEINIDIUM C. Christensen

TAPEINIDIUM AMBOYNENSE (Hook.) C. Chr. Ind. Fil. (1906) 631.

Davallia amboynensis Hook. Sp. Fil. 1 (1846) 178, t. 56.

Dryopteris triplex silvestris I terrestris Rumph. Herb. Amb. 6: 73. Amboina, Lateri, Robinson Pl. Rumph. Amb. 443, September 9, 1913, in forests, altitude about 250 meters.

This is probably the correct disposition of the Rumphian species. Blume thought it was a species of *Aspidium*, and Hasskarl placed it with doubt under *Davallia patens* Sw., to which it certainly cannot be referred.

ATHYRIUM Roth

ATHYRIUM ESCULENTUM (Retz.) Copel. in Philip. Journ. Sci. 3 (1908) Bot. 295.

Hemionitis esculenta Retz. Obs. 6 (1791) 38.

Diplazium esculentum Sw. in Schrad. Journ. 1801² (1803) 312.

Filix esculenta Rumph. Herb. Amb. 6: 67, t. 29.

This characteristic, widely distributed, and well-known fern is not represented in our Amboina collections. The Rumphian figure is a good representation of the species and is unmistakably *Athyrium esculentum* Copel. Henschel and Pritzel have referred it to *Diplazium malabaricum* Spreng., which is a synonym of *Athyrium esculentum* Copel.

ASPLENIUM Linnaeus

ASPLENIUM NIDUS Linn. Sp. Pl. (1753) 1079.

Phyllitis amboinica I arborea Rumph. Herb. Amb. 6:82 (haud $t.\ 37$, $f.\ 1$).

Phyllitis amboinica II terrestris Rumph. Herb. Amb. 6:82 (haud $t. 37, \dot{f}. 2$).

AMBOINA, Ayer putri, Robinson Pl. Rumph. Amb. 448, July 28, 1913, epiphytic at low altitudes.

The descriptions given by Rumphius both apply to an Asplenium of the nidus group, but perhaps more than one species is included. The figures are poor, and the one supposed to represent Phyllitis amboinica II terrestris does not agree at all with the plant described; it may be some species of Vittaria or Polypodium. The figure supposed to represent Phyllitis amboinica I arborea is almost equally poor for Asplenium nidus Linn., but may have been drawn from a straggling specimen. The form merely mentioned as having fronds much smaller and narrower

than the above, which Hasskarl indicated as *Phyllitis amboinica III*, is indeterminable, but is certainly no *Asplenium*; it may be a *Vittaria*.

BLECHNUM Linnaeus

BLECHNUM ORIENTALE Linn. Sp. Pl. (1753) 1077.

Polypodium simplex Burm. f. Fl. Ind. (1768) 235 (type!).
Lonchitis ambolnica recta I major rubra Rumph. Herb. Amb. 6:70,
t. 30, f. 1.

Under the name Lonchitis amboinica Rumphius described several quite unrelated species, apparently pertaining to as many different genera as he described forms. The form figured, t. 30, f. 1, which manifestly is recta I major rubra, is unquestionably Blechnum orientale Linn. It was reduced by Burman f. to Polypodium simplex Burm. f., a species apparently typified by the Rumphian illustration, and one that has remained of uncertain status until the present time. Loureiro erroneously referred it to Pteris vittata Linn., while Henschel, following Blume, placed it as an undetermined species of Angiopteris. The red color of the young pinnae, mentioned by Rumphius, is very characteristic of Blechnum orientale Linn.

STENOCHLAENA J. Smith

STENOCHLAENA PALUSTRIS (Burm. f.) Bedd. Ferns Brit. Ind. Suppl. (1876) 26.

Polypodium palustre Burm. f. Fl. Ind. (1768) 234.

Lonchitis amboinica III volubilis Rumph. Herb. Amb. 6:71, t. 31.

Not represented in our Amboina collections. The figure, however, unquestionably represents a species of *Stenochlaena*, and from the description quite certainly *S. palustris* (Burm. f.) Bedd. It has been reduced by Willdenow to *Lomaria scandens* Willd., and by Poiret to *Onoclea scandens* Sw., both synonyms of *Steno*chlaena palustris Bedd.

CHEILANTHES Swartz

CHEILANTHES TENUIFOLIA (Burm. f.) Sw. Syn. (1806) 129, 332.

Trichomanes tenuifolia Burm. f. Fl. Ind. (1768) 237.

Acrostichum tenue Retz. Obs. 6 (1791) 39.

Dryopteris campestris Rumph. Herb. Amb. 6: 74, t. 34, f. 2.

Amboina, Way tommo, Robinson Pl. Rumph. Amb. 442, August 19, 1913, terrestrial, altitude about 80 meters.

The Rumphian illustration is unmistakably this species. It was first reduced by Burman f., in the original description of *Trichomanes tenuifolia* Burm f., and has been cited under the synonyms given above as well as under the additional synonym *Adiantum varians* Poir.

ADIANTUM Linnaeus

ADIANTUM sp.

Capillus veneris amboinicus Rumph. Herb. Amb. 6:77, t. 34, f. 1.

Not represented in our Amboina collections. The figure rather strongly resembles the Philippine Adiantum opacum Copel. Loureiro erroneously referred it to Adiantum capillus veneris Linn., while Pritzel placed it with equal error under Adiantum aethiopicum Thunb. Hasskarl, Neue Schlüssel (1866) 165, suggested that it might be Adiantum pulchellum Blume, but if correctly drawn the figure represents a species quite different from the one described by Blume.

ADIANTUM sp.?

Dryopteris silvestris III petraea Rumph. Herb. Amb. 6:74.

Hasskarl, Neue Schlüssel (1866) 165, has suggested that this may be *Adiantum pulchellum* Blume. It is probably not Blume's species, but is certainly an *Adiantum* or a *Lindsaya*.

POLYPODIUM Linnaeus

POLYPODIUM SINUOSUM Wall. Cat. (1829) no. 2231, nomen nudum; Hook. Sp. Fil. 5 (1863) 61, t. 284.

Scolopendria II minor Rumph. Herb. Amb. 6:84.

Amboina, Kati-kati, Robinson Pl. Rumph. Amb. 445, October 17, 1913, on trees in mangrove swamps.

There is some doubt as to whether or not *Scolopendria II* minor Rumph. is *Polypodium sinuosum* Wall. as here interpreted. It seems probable that more than one species of *Polypodium* is included in Rumphius's description.

POLYPODIUM PHYMATODES Linn. Mant. 2 (1771) 306.

Polypodium excavatum Roxb. Hort. Beng. (1814) 75 (type!). Polypodium indicum II minus Rumph. Herb. Amb. 6: 80, t. 35, f. 2. AMBOINA, Ayer putri, Robinson Pl. Rumph. Amb. 441, July 28, 1913,

epiphytic at low altitudes.

The specimen is very typical *Polypodium phymatodes* Linn. and agrees with Rumphius's description and figure. Burman f., Fl. Ind. (1768) 233, referred it to *Polypodium dissimile* Linn., a species of doubtful status, based on a figure of Plukenet's, drawn from American material. It is the type of *Polypodium excavatum* Roxb., as originally published in the Hortus Bengalensis, by citation of the Herbarium Amboinense; see C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 415. It may not, however, be the species actually described by Roxburgh under the same name in Calcutta Journ. Nat. Hist. 4 (1844) 485.

Hasskarl, Neue Schlüssel (1866) 166, suggested *Polypodium phymatodes* Linn. as the proper place for the Rumphian species, and I consider that this is manifestly the correct disposition of it.

DRYNARIA (Bory) J. Smith

DRYNARIA SPARSISORA (Desv.) Moore Index Fil. (1862) 348.

Polypodium sparsisorum Desv. in Berl. Mag. 5 (1811) 315.

Polypodium indicum I pilosum s. majus Rumph. Herb. Amb. 6: 78, t. 36.

AMBOINA, Ayer putri, Robinson Pl. Rumph. Amb. 450, July 28, 1913, epiphytic at low altitudes.

This was originally reduced by Linnaeus to Polypodium quercifolium Linn. (=Drynaria quercifolia J. Sm.) in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 1325, Sp. Pl. ed. 2 (1763) 1547, which has been accepted by all authors who have had occasion to cite the Rumphian illustration. There is nothing in the figure by which the Rumphian species can be distinguished as between Drynaria sparsisora Moore and D. quercifolia J. Sm., the two being very closely allied. The Amboina specimens, however, are Drynaria sparsisora Moore, and hence the presumption is that Polypodium indicum I majus Rumph. pertains to this species rather than to Drynaria quercifolia J. Sm.

PLATYCERIUM Desvaux

PLATYCERIUM CORONARIUM (Koenig) Desv. Prodr. (1827) 213.

Osmunda coronaria Koenig Naturf. Halle 21 (1785) 107, t. 3.

Simbar majangan Rumph. Herb. Amb. 6:83.

This species is not represented in our Amboina collections. The plant described is manifestly a *Platycerium*, and in all probability it is *P. coronarium* Desv. Blume reduced it to *Platycerium biforme* Bl., which is a synonym of *P. coronarium* Desv.

PARKERIACEAE

CERATOPTERIS Brongniart

CERATOPTERIS THALICTROIDES (Linn.) Brongn. in Bull. Soc. Philom. (1821) 186.

Acrostichum thalictroides Linn. Sp. Pl. (1753) 1070.

Acrostichum siliquosum Linn. 1. c.

Millefolium aquaticum Rumph. Herb. Amb. 6: 176, t. 74, f. 1.

This common and widely distributed fern is not represented in our Amboina collections. *Millefolium aquaticum* Rumph. was

first reduced by Linnaeus to Acrostichum siliquosum Linn., a synonym of Ceratopteris thalictroides (Linn.) Brongn., which is manifestly the correct disposition of it. It has also been cited under the following synonyms of Ceratopteris thalictroides Brongn.: Ellobocarpus oleraceus Kaulf. and Pteris thalictroides Willd.

GLEICHENIACEAE

GLEICHENIA Smith

GLEICHENIA LINEARIS (Burm. f.) Clarke in Trans. Linn. Soc. Bot. 1 (1880) 428.

Polypodium lineare Burm. f. Fl. Ind. (1768) 235, t. 67, f. 2. Filix calamaria Rumph. Herb. Amb. 6: 85, t. 38.

AMBOINA, Batoe merah, Robinson Pl. Rumph. Amb. 446, July 18, 1913, on rocks at low altitudes, locally known as paku kawa.

This reduction of Filix calamaria is certainly correct, for the figure and description are unmistakable. It has been reduced by Poiret to Polypodium dichotomum Thunb., by Willdenow to Mertensia dichotoma Willd., by Blume to Gleichenia hermannii R. Br., and by Mettenius to Gleichenia dichotoma Hook. var. alternans Mett.

SCHIZAEACEAE

SCHIZAEA Smith

SCHIZAEA DICHOTOMA (Linn.) Smith in Mém. Acad. Turin 5 (1793) t. 9, f. 9.

Acrostichum dichotomum Linn. Sp. Pl. (1753) 1068.

Equisetum silvestre III Rumph. Herb. Amb. 6: 92.

Amboina, Salahoetoe, Robinson Pl. Rumph. Amb. 460, November, 1913.

This reduction was first made by Hasskarl, Neue Schlüssel (1866) 168, following Blume's reduction of it to the genus *Schizaea*, and this is apparently the correct disposition of it.

LYGODIUM Swartz

LYGODIUM CIRCINNATUM (Burm. f.) Sw. Syn. (1806) 153.

Ophioglossum circinnatum Burm. f. Fl. Ind. (1768) 228.

Adianthum volubile I polypoides Rumph. Herb. Amb. 6:75, t. 33 (including medium and scriptum).

Amboina, Binting and Amahoesoe, Robinson Pl. Rumph. Amb. 451, 452, August, 1913, in limestone regions at low altitudes.

Linnaeus originally reduced this, through error, to *Ophioglossum flexuosum* Linn., in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134. Burman f., Fl. Ind. (1768) 228, cites it

as a synonym in the original description of *Ophioglossum circinnatum* Burm. f., the species being based primarily on Javan specimens; it has, since Burman's species was proposed, been cited under this name or synonyms of it. The forms described as *medium* and *scriptum* are manifestly referable to *Lygodium circinnatum* Sw.

LYGODIUM SCANDENS (Linn.) Sw. in Schrad. Journ. 1800² (1801) 106. Ophioglossum scandens Linn. Sp. Pl. (1753) 1063.

Adianthum volubile III minus Rumph. Herb. Amb. 6: 76, t. 32, f. 2, 3.

AMBOINA, Soja road and vicinity of the town of Amboina, Robinson Pl. Rumph. Amb. 453, 454, August and October, 1913, in thickets and forests, altitude 30 to 70 meters, locally known as paku kawa.

The reduction to *Ophioglossum scandens* Linn. was made originally by Linnaeus in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 1318, but it is to be noted that Linnaeus quotes "Dryopteris triplex" as the name corresponding to t. 32, under Ophioglossum scandens. The form figured is an excellent representation of Lygodium scandens (Linn.) Sw. Blume has referred it to Lygodium microphyllum R. Br., a synonym of L. scandens Sw.

OPHIOGLOSSACEAE

OPHIOGLOSSUM Linnaeus

OPHIOGLOSSUM PENDULUM Linn. in Stickman Herb. Amb. (1754) 27, Amoen. Acad. 4 (1759) 135, Sp. Pl. ed. 2 (1763) 1518 (type!).

Scolopendria I major Rumph. Herb. Amb. 6: 84, t. 37, f. 3.

Amboina, Soja, Robinson Pl. Rumph. Amb. 440, August 2, 1913, in forests at an altitude of 400 meters.

Scolopendria major Rumph. is the whole basis of Ophioglossum pendulum Linn., this reduction having been accepted by all authors, although by some placed in another genus, as Ophioderma pendula (Linn.) Presl.

OPHIOGLOSSUM PEDUNCULOSUM Desv. in Berl. Mag. 5 (1811) 306. Ophioglossum simplex Rumph. Herb. Amb. 6: 152, t. 88, f. 2.

Not represented in our Amboina collections. Ophioglossum simplex Rumph. was originally reduced by Linnaeus to Ophioglossum vulgatum Linn. in Stickman Herb. Amb. (1754) 28, Amoen. Acad. 4 (1759) 135, which is manifestly a wrong disposition of it. Roxburgh, Calcutta Journ. Nat. Hist. 4 (1844) 475, placed it under Ophioglossum cordifolium Roxb., and

Schlechtendal, Adumbr. (1825) 9, placed it under *Ophioglossum* moluccanum Schlecht., both synonyms of *Ophioglossum* pedunculosum Desy.

HELMINTHOSTACHYS Kaulfuss

HELMINTHOSTACHYS ZEYLANICA (Linn.) Hook. Gen. Fil. (1840) t. 47. Osmunda zeylanica Linn. Sp. Pl. (1753) 1063.

Ophioglossum laciniatum Rumph. Herb. Amb. 6: 153, t. 68, f. 3.

Amboina, Kati-kati, Robinson Pl. Rumph. Amb. 455, October 28, 1913, in ravines at an altitude of about 70 meters.

The original reduction of *Ophioglossum laciniatum* was made by Linnaeus (to *Osmunda zeylanica* Linn.) in Stickman Herb. Amb. (1754) 28, Amoen. Acad. 4 (1759) 135, Syst. ed. 10 (1759) 1318, Sp. Pl. ed. 2 (1763) 1519, which as *Helminthostachys zeylanica* Hook. is manifestly the correct disposition of it. By other authors it has been cited under *Botrychium zeylanicum* Willd., and *Helminthostachys dulcis* Kaulf.—both synonyms of *H. zeylanica* Hook.

MARATTIACEAE

ANGIOPTERIS Hoffmann

ANGIOPTERIS AMBOINENSIS DeVr. in Nederl. Kruidk. Arch. 3 (1852) 195, Monogr. Marat. (1853) 32.

Filix aquatica I femina Rumph. Herb. Amb. 6: 65, t. 28.

Not represented in our Amboina collections. Blume thought that this might be a species of *Marattia*, but the size of the plant, as indicated by Rumphius, makes this suggested reduction an impossible one. While it is impossible definitely to state that *Filix aquatica* Rumph. is identical with *Angiopteris amboinensis* DeVr., the presumption is very great that they are the same.

LYCOPODIACEAE

LYCOPODIUM Linnaeus

LYCOPODIUM CERNUUM Linn. Sp. Pl. (1753) 1103.

Cingulum terrae Rumph. Herb. Amb. 6:87, t. 40, f. 1.

Amboina, Batoe merah and Soja road, Robinson Pl. Rumph. Amb. 457, July and August, 1913, in rocky places and on grassy hillsides, altitude 15 to 200 meters, locally known as daun rai rai.

Linnaeus originally reduced Cingulum terrae to Lycopodium canaliculatum Linn. in Stickman Herb. Amb. (1754) 27, Amoen. Acad. 4 (1759) 135, but later, Syst. ed. 10 (1759) 1330, placed it under Lycopodium cernuum Linn., where it manifestly belongs.

LYCOPODIUM PHLEGMARIA Linn. Sp. Pl. (1753) 1101.

Equisetum amboinicum s. arboreum squamatum Rumph. Herb. Amb. 6: 91, t. 41, f. 1.

Amboina, Binting, Robinson Pl. Rumph. Amb. 456, August 13, 1913, on trees.

This reduction was first made by Linnaeus in Stickman Herb. Amb. (1754) 27, Amoen. Acad. 4 (1759) 135, Syst. ed. 10 (1759) 1330, and is certainly the correct disposition of it.

LYCOPODIUM NUMMULARIFOLIUM Blume Enum. (1828) 263.

Equisetum amboinicum II minor Rumph. Herb. Amb. 6: 92?

Not represented in our Amboina collections. The reduction is that suggested by van Alderwerelt van Rosenburgh in Philip. Journ. Sci. 11 (1916) Bot. 120. Hasskarl, Neue Schlüssel (1866) 167, thought that it might be *Lycopodium phlegmarioides* Spring.

SELAGINELLACEAE

SELAGINELLA * Spring

SELAGINELLA PLANA (Desv.) Hieron. in Engl. & Prantl Nat. Pflanzenfam. 14 (1900) 703.

Lycopodium planum Desv. in Lam. Encycl. Suppl. 3 (1813) 554.

Muscus fruticescens femina Rumph. Herb. Amb. 6: 86, t. 39, f. 1.

Amboina, Gelala, Robinson Pl. Rumph. Amb. 458, July 16, 1913, on banks at low altitudes.

Undoubtedly this is the correct disposition of *Muscus frutices*cens femina Rumph., and is that suggested by Desvaux in Lam. Encycl. Suppl. 3 (1813) 538. The only other suggested reduction is that of Hasskarl, Neue Schlüssel (1866) 167, who thought it might be *Lycopodium dichotomum* Sw.

SELAGINELLA D'URVILLEI A. Br. in Verh. Zool. Bot. Ges. (1869) 585.

Muscus fruticescens mas Rumph. Herb. Amb. 6: 86, t. 39, f. 2.

AMBOINA, Hatiwe, Robinson Pl. Rumph. Amb. 459, September 4, 1913, in light woods at low altitudes.

This is in all probability the correct disposition of *Muscus* fruticescens mas Rumph.; although, if a number of allied species should be found in Amboina, it would be difficult or impossible to determine to which of the forms the Rumphian figure applies. Desvaux, in Lam. Encycl. Suppl. 3 (1813) 558, thought that it might be *Lycopodium* caudatum Desv., and Hasskarl, Neue Schlüssel (1866) 167, thought that it might be *Lycopodium* fruticulosum Blume, both of these being species of Selaginella.

^{*} Retained name, Brussels Congress; Selaginoides Boehm. (1760), Lycopodioides Boehm. (1760), and Stachygynandrium Beauv. (1804) are older.

PSILOTACEAE

PSILOTUM Swartz

PSILOTUM TRIQUETRUM Sw. Syn. (1806) 117.

Equisetum secundum Rumph. Herb. Amb. 6: 92.

AMBOINA, Amahoesoe, Bato Gadjah, and vicinity of the town of Amboina, Robinson Pl. Rumph. Amb. 461, 462, August and September, 1913, on trees, sea level to an altitude of 150 meters.

Hasskarl, Neue Schlüssel (1866) 167, placed this under *Psilotum complanatum* Sw., but as the Amboina specimens are all referable to *P. triquetrum* Sw., it is assumed that this is the correct disposition of *Equisetum secundum* Rumph.

PTERIDOPHYTA OF UNCERTAIN STATUS

Filix aquatica II mas Rumph. Herb. Amb. 6: 66.

Very briefly described in the same chapter with Angiopteris amboinensis DeVr. Hasskarl, Neue Schlüssel (1866) 164, has referred it to Pteris longipes Don, but without good reason. Its status cannot be determined from the data given by Rumphius.

Filix urens Rumph. Herb. Amb. 6: 69.

This is indeterminable from any data given by Rumphius; perhaps a Dryopteris.

Lonchitis amboinica recta I major alba Rumph. Herb. Amb. 6: 70.

Van Alderwerelt van Rosenburgh has suggested that this may be Poly-podium albens Blume.

Lonchitis amboinica recta II minor Rumph. Herb. Amb. 6: 70.

Under this two forms are described, nigra and alba, both indeterminable from any data at present available. Willdenow, Sp. Pl. 5 (1810) 228, referred the figure, $t.\ 30$, $f.\ 2$, to $Aspidium\ amboinense$ Willd., which is supposed to be the same as $Dryopteris\ parasitica$ O. Kuntze. The figure certainly does not represent the latter species, and there is, moreover, no way of determining which form Rumphius intended it to represent as between the forms major and minor.

Lonchitis saguaria Rumph. Herb. Amb. 6: 72. Indeterminable. Lonchitis amara Rumph. Herb. Amb. 6: 72. Indeterminable. Lonchitis pilosa Rumph. Herb. Amb. 6: 72. Indeterminable. Lonchitis muscosa Rumph. Herb. Amb. 6: 72. Indeterminable.

The above four forms are briefly described. A more comprehensive exploration of Amboina may yield data and material by which they can be eventually determined.

Dryopteris silvestris II arborea Rumph. Herb. Amb. 6: 74.

Indeterminable. An epiphytic fern, perhaps belonging in the *Davalliae* as suggested by Hasskarl.

Filix lanuginosa Rumph. Herb. Amb. 6: 69.

From the description the plant must be Cibotium baranetz J. Sm. or Dicksonia sorbifolia Sm., as suggested by van Alderwerelt van Rosenburgh. A future exploration of Amboina will doubtless yield material by which its status can be definitely determined.

Filix canarina Rumph. Herb. Amb. 6: 64.

Indeterminable from the data and the material at present available.

SPERMATOPHYTA

GYMNOSPERMAE

CYCADACEAE

CYCAS Linnaeus

CYCAS RUMPHII Miq. in Bull. Soc. Phys. Nat. Néerl. (1839) 45.

Olus calappoides Rumph. Herb. Amb. 1: 86, t. 22, 23. Olus calappoides II e Celebes Rumph. l. c. 87, t. 20, 21.

AMBOINA, Waë, Robinson Pl. Rumph. Amb. 563, November 29, 1913, in light forests near sea level, staminate, locally known as sayor kalappa.

The specimen represents *Olus calappoides mas* Rumph. Herb. Amb. 1: 99, t. 23. Possibly more than one species is represented by the plants described and figured by Rumphius, but more abundant material and a critical study of all the Indo-Malayan forms allied to *Cycas circinalis* Linn. will be necessary definitely to settle this point. The Rumphian illustrations are as follows: t. 20 represents an oblong-ovoid staminate inflorescence with leaves, poor; t. 21, a habit sketch of the same; t. 22, a habit sketch and female inflorescence and infructescence, fairly good; and t. 23, a habit sketch with an elongated staminate inflorescence.

It is by no means certain that $Cycas\ rumphii$ Miq. is specifically distinct from $C.\ circinalis$ Linn. The latter should be interpreted by Ceylon and Indian specimens, although in the original description Linnaeus gives two references to Amboina figures and descriptions, including $Olus\ calappoides$ Rumph. Herb. Amb. 1: 86, $t.\ 22,\ 23$. In Stickman, Herb. Amb. (1754) 6, and in Amoen. Acad. 4 (1759) 119, $t.\ 21$ to 23 are included. Loureiro, Fl. Cochinch. (1790) 632, cites all four figures under $Cycas\ inermis$ Lour., a species that must be interpreted from specimens from southern China and Cochin-China; it is supposed to be the same as $Cycas\ revoluta$ Thunb., but Loureiro's description of the leaves does not conform with Thunberg's species. Blume, Rumphia 4 (1848) 14, refers Lagolo Rumph. Herb. Amb. 1: 87, $t.\ 22,\ B$, to $Cycas\ thouarsii\ R.\ Br.$, a species of eastern Africa and Madagas-

car and manifestly very closely allied to Cycas rumphii Miq. Hamilton, Mem. Wern. Soc. 5 (1826) 322, refers Olus calappoides Rumph., t. 20, 21, to Cycas pectinata Ham., a species described from Indian specimens, and one not included in Index Kewensis. Miquel, Comment. Phyt. (1840) 126, refers Olus calappoides II e Celebes to Cycas celebica Miq., a species apparently to be interpreted from Rumphius's description. Doctor Stapf * has contrasted Cycas thouarsii R. Br., C. rumphii Miq., and C. circinalis Linn., giving in synoptical form the macroscopic and microscopic characters by which the three may be distinguished. Pending a critical revision of the entire genus, it is probably best to retain the Moluccan form, that is manifestly closely allied to Cycas circinalis Linn., under the name Cycas rumphii Miq.

CYCAS REVOLUTA Thunb. Fl. Jap. (1784) 229.

Arbor calappoides sinensis Rumph. Herb. Amb. 1: 92, t. 24.

This commonly cultivated species is not represented in our Amboina collections. The Rumphian species is manifestly *Cycas revoluta* Thunb. The drawing represents a leaf only, but is well executed and characteristic of the species.

TAXACEAE

PODOCARPUS † Persoon

PODOCARPUS RUMPHII Blume Rumphia 3 (1847) 214.

Lignum emanum Rumph. Herb. Amb. 3: 47, t. 26.

AMBOINA, Hoetoemoeri road and Hitoe messen, Robinson Pl. Rumph. Amb. 309, September 30 and October 18, 1913, altitude 250 and 700 meters, locally known as dammar puti (properly the name for Agathis alba Foxw., p. 76).

This specimen is Lignum emanum Rumph., but it may not be the same as the form on which Blume actually based his description of Podocarpus rumphii. It should be critically compared with the species commonly known as Podocarpus neriifolius Don. According to Blume it is Cerbera nereifolia Zipp. in Bijdr. Nat. Wetensch. 5 (1830) 175, but Podocarpus neriifolius Don is earlier. Lignum emanum Rumph. is cited by Blume as a synonym of Podocarpus rumphii.

Hasskarl, Neue Schlüssel (1866) 38, refers Dammara alba mas Rumph. Herb. Amb. 2: 175, t. 57, f. A-C, to Podocarpus latifolia

^{*} Cycas Thouarsii. Kew Bull. (1916) 1-8.

[†] Retained name, Vienna Code; Nageia Labill. (1806) is older.

Blume=Podocarpus blumei Endl. Of the figures cited, "A" is a staminate cone of Agathis alba Foxw.; "B" is, according to Rumphius, a leaf of the true dammar, Agathis alba Foxw.; while "C" is said by Rumphius to be a branchlet from a young tree of the female dammar. I can see no reason for considering that Podocarpus blumei Endl. is included in the description of Dammara alba Rumph. The leaves of young plants of Agathis alba Foxw. very greatly resemble those of Podocarpus blumei Endl., and it is, of course, possible that the two were confused by Rumphius.

PINACEAE

AGATHIS* Salisbury

AGATHIS ALBA (Lam.) Foxw. in Philip. Journ. Sci. 5A (1910) 173, 6 (1912) Bot. 167.

Dammara alba Lam. Encycl. 2 (1786) 259 (type!).

Pinus abies Lour. Fl. Cochinch. (1790) 579.

Agathis loranthifolia Salisb. in Trans. Linn. Soc. 8 (1807) 311.

Abies dammara Poir. in Lam. Encycl. Suppl. 5 (1817) 35.

Agathis dammara Rich. Comm. Conif. Cyc. (1826) 93, t. 19.

Pinus dammara Lamb. Pin. 1 (1803) 61, t. 38.

Dammara rumphii Presl Epim. Bot. (1851) 236.

Dammara alba Rumph. Herb. Amb. 2: 174, t. 57.

Amboina, Soija diatas, Robinson Pl. Rumph. Amb. 220, locally known as dammar puti.

Dammara alba Rumph. is the whole basis of Dammara alba Lam. Lamarck published the species with Rumphius as authority. It must be interpreted from the Rumphian figure and description and from Amboina specimens, while most of the synonyms cited above must be interpreted wholly or partly from the same data. Warburg, Monsunia 1 (1900) 182, in his attempt to split up the collective species Agathis dammara (Lamb.) Rich. states: "Diese Art kann nur nach der Beschreibung von Rumph rekonstruirt werden, da sicheres aus Amboina stammendes Material leider nicht vorliegt und die vielfachen in der Litteratur gegebenen Beschreibungen der Sammeltart nach dem verschiedensten Material angefertigt sind." Warburg recognized ten species of Agathis from the Malayan region, but the status of these as valid ones is open to grave doubt.

Dammara alba mas Rumph. Herb. Amb. 2: 175, t. 57, f. A-C, referred by Hasskarl, Neue Schüssel (1866) 38, to Podocarpus latifolia Blume, I consider to be Agathis alba (Lam.) Foxw.

^{*} Retained name, Vienna Code; Dammara Lam. (1786) is older.

Dammara alba femina Rumph. l. c. 175, t. 57, f. D is surely Agathis alba (Lam.) Foxw.

Dammara celebica Rumph. Herb. Amb. 2: 179 = Dammara alba var. celebica Hassk., Neue Schlüssel (1866) 38, is suggested by Warburg to be the same as Agathis celebica (Koord.) Warb. Monsunia 1 (1900) 185, but Doctor Foxworthy, who has examined Celebes specimens collected by Koorders, considers the species to be a synonym of Agathis alba Foxw. and reduces likewise Agathis borneensis Warb., A. beccarii Warb., and A. macrostachys Warb.

GNETACEAE

GNETUM Linnaeus

GNETUM GNEMON Linn. Mant. 1 (1767) 125.

Gnetum ovalifolium Poir. in Lam. Encycl. Suppl. 2 (1811) 810. Gnemon domestica mas Rumph. Herb. Amb. 1: 181, t. 72. Gnemon domestica femina Rumph. Herb. Amb. 1: 181, t. 71. Gnemon silvestris Rumph. Herb. Amb. 1: 183, t. 73.

AMBOINA, Soja, Robinson Pl. Rumph. Amb. 213, August 31, 1913, in forests at 300 meters altitude (Gnemon silvestris Rumph.); Robinson Pl. Rumph. Amb. 209, October 24, 1913, in light woods, altitude about 250 meters, both locally known as gnemo.

I consider that the three forms described and figured by Rumphius represent but a single species, this being practically the opinion of other authors who have considered the status of the Rumphian species. Gnemon domestica femina Rumph. was reduced by Linnaeus to Gnetum gnemon Linn. in the original description of the species, the only deviation from this reduction presented in botanical literature being Blume's reference of it to Gnetum gnemon Linn, var. laurinum Blume Rumphia 4 (1848) 3, together with Gnemon domestica mas Rumph. Gnetum ovalifolium Poir. was based on specimens collected in Amboina by Labillardière, with an added reference to Gnemon silvestris Rumph. Blume has reduced it to Gnetum gnemon Linn. as var. ovalifolium (Poir.) Blume, but I consider it scarcely distinguishable from typical Gnetum gnemon Linn, even as a variety. Gnemon domestica mas Rumph. was reduced by Blume to Gnetum gnemon Linn., var. lucidum Blume, Rumphia 4 (1848) 4.

GNETUM INDICUM (Lour.) comb. nov.

Abutua indica Lour. Fl. Cochinch. (1790) 630.

Gnetum funiculare Brongn. in Duperry Voy. Bot. (1829) 12.

Gnetum funiculare Blume Nov. Fam. (1834) 32, Hoev. & DeVriese Tijdschr. 1 (1834) 162, Ann. Sci. Nat. II 2 (1834) 106.

Gnetum latifolium Blume op. cit. 30, 162, 105.

Gnemon funicularis Rumph. Herb. Amb. 5: 12, t. 8.

Not represented in our Amboina collections. Loureiro quotes Gnemon funicularis Rumph. as a synonym of Abutua indica Lour. in the original description of that species. Louriero's type, in the herbarium of the British Museum, is a leaf specimen. and according to Doctor Rendle, who has examined it for me, is apparently the same as Gnetum funiculare Blume. Roxburgh, Hort. Beng. (1814) 66, based his Gnetum scandens on "H. M. 7. t. 22; H. A. 5. t. 7, 8," i. e. the first reference to Rheede Hortus Malabaricus, and the second to Rumphius Herbarium Amboinense; I believe that the species should be typified by the first reference. However, "Ula. Rheed. mal. 7. p. 41. t. 22" is the whole basis of Thoa edulis Willd. Sp. Pl. 4 (1805) 477, so that Gnetum scandens Roxb, becomes a synonym of Gnetum edule (Willd.) Blume, together with Gnetum ula Brongn. plant that Blume actually described as Gnetum edule seems not to be the same as the Indian Thoa edulis Willd.. but the name must go with the Indian plant. It is by no means clear that this continental form, which appears in modern literature as Gnetum scandens Roxb., is specifically distinct from the Malayan Gnetum indicum (Lour.) Merr., but at any rate, Loureiro's specific name is much older than any of the others.

GNETUM GNEMONOIDES Brongn. in Duperry Voy. Bot. (1829) 12 (type!).

Gnetum-rumphianum Becc. Malesia 1 (1877) 182.

Gnetum verrucosum Karst. in Ann. Jard. Bot. Buitenz. 11 (1893) 216.

Funis gnemoniformis Rumph. Herb. Amb. 5: 12, t. 8.

Not represented in our Amboina collections. Gnetum gnemonoides Brongn. was based wholly on the Rumphian figure and description of Funis gnemoniformis. Blume, Fam. Nov. (1834) 31, Ann. Sci. Nat. II 2 (1834) 106, reduced Funis gnemoniformis Rumph. to Gnetum edule Blume, a species based on Thoa edulis Willd. and differing remarkably from Rumphius's species, as described, in its fruit characters. Gnetum rumphianum Becc. was based on specimens from New Guinea, with the addition of a reference to Funis gnemoniformis Rumph. It has seeds 5 to 5.5 cm long, in entire agreement with Rumphius's description of the fruits of Funis gnemoniformis as "tres digitos transversales longi." Gnetum verrucosum Karst. was described from specimens originating in Buru, with fruits 4.5 cm in length, and I have no hesitation in reducing it to Gnetum gnemonoides Brongn.

ANGIOSPERMAE

(MONOCOTYLEDONS)

PANDANACEAE*

PANDANUS Linnaeus

PANDANUS POLYCEPHALUS Lam. Encycl. 1 (1785) 372 (type!).

Pandanus humilis Rumph. Herb. Amb. 4: 143, t. 76.

AMBOINA, Binting and Lateri, Robinson Pl. Rumph. Amb. 54, July and August, 1913, in shaded places along streams at low altitudes, and in forests at an altitude of about 250 meters, locally known as keker and pandan keker ayer.

Pandanus humilis Rumph. is the whole basis of Pandanus polycephalus Lam., Lamarck's species being based wholly on Rumphius's figure and description. Loureiro, Fl. Cochinch. (1790) 603, described Pandanus humilis Lour. from Cochin-China material and reduced to it Pandanus humilis Rumph. There is every reason to suppose that the Cochin-China plant described by Loureiro represents a species entirely different from that described by Rumphius, and that Warburg was in error in reducing Pandanus humilis Lour. to Pandanus polycephalus Lam. The type of Loureiro's species is manifestly the Cochin-China plant described, not the Rumphian synonym cited.

PANDANUS ROBINSONII sp. nov. § Keura.

Pandanus spurius Rumph. Herb. Amb. 4: 142, t. 75.

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 30 (type), October 29, 1913, along the seashore, locally known as keker laut.

Arbor circiter 3.5 m alta, ramosa. Foliis circiter 1 m longis, 4.5 cm latis, aculeatis, apice longissime tenuiterque caudatis. Capitulis ellipticis, 10 cm longis vel maturis majoribus, solitariis, subpendulis; drupis numerosis, obconicis, circiter 2.5 cm longis vel paullo longioribus, apice 1.5 ad 2.5 cm latis, deorsum angustatis, apice latis, subtruncatis, 5- ad 10-locularis, loculis apice sulcis circiter 4 mm longis separatis, lobis oblique pyramidatis, acutis, brunneis, nitidis, 5 ad 8 mm diametro.

Pandanus spurius Rumph. has been referred to many different

^{*} I am under obligations to Dr. U. Martelli, Florence, Italy, for determinations of the *Pandanaceae*. For the proposed changes in nomenclature, however, and for the discussions of the Rumphian species, I am wholly responsible.

species under the binomial system, but none of the names are valid, for which reason I propose to call this plant Pandanus robinsonii. Doctor Martelli, who has made the determination of the specimen as Pandanus spurius, would call it Pandanus spurius Mart., non Mig., but I consider the specific name spurius to be invalid. Loureiro, Fl. Cochinch. (1790) 603, erroneously referred it to Pandanus odoratissimus Linn, f. Lamarck, Encycl. 1 (1785) 372, placed it under Pandanus odoratissimus as var. β. Henschel, Vita Rumph. (1833) 166, referred the name Pandanus spurius, but not the figure, to Pandanus fascicularis Lam., erroneously citing plates 80 and 81 as P. spurius. Persoon, Svn. 2 (1807) 597, placed it, with doubt, under Pandanus candelabrum Beauv., an African species. Flora 25 (1842) Beibl. 2:14, referred it to Marguatia globosa Hassk., a new genus and species based on specimens cultivated in the botanic garden at Buitenzorg, Java, originating in Mauritius; this Walpers, Ann. 1 (1849) 753, renamed Hasskarlia globosa Walp. Both names are synonyms of Pandanus utilis Bory. Miquel, Anal. Bot. Ind. (1851) 57, Fl. Ind. Bat. (1855) 157, recognizing the fact that Pandanus spurius Rumph. was not the same as Marquatia globosa Hassk. (Hasskarlia globosa Walp.), adopted the specific name Pandanus spurius for the species, after Rumphius, but his description applies to the species Hasskarl described, and thus it becomes a synonym of Pandanus utilis Bory.

PANDANUS REPENS Miq. Fl. Ind. Bat. 3 (1855) 165 (type!). Pandanus repens Rumph. Herb. Amb. 4: 152.

Not represented in our Amboina collections. From the description the plant is probably a variety of *Pandanus tectorius* Soland., corresponding to the Philippine form, *Pandanus sabotan* Blanco, used for similar purposes, that is, for making mats. A species of very doubtful status, known only from Rumphius's description.

PANDANUS HASSKARLII nom. nov.

Pandanus latifolius Hassk. in Flora 25 (1842) Beibl. 2: 13, non Perr., nec aliorum.

Pandanus latifolius Rumph. Herb. Amb. 4: 146, t. 78.

Not represented in our Amboina collections. There is no doubt whatever that Hasskarl correctly interpreted *Pandanus latifolius* Rumph. I have, however, proposed a new name for the species, as the name *latifolius* is preoccupied in the genus.

PANDANUS TECTORIUS Soland. in Parkins. Voy. H. M. S. Endeavour (1773) 46.

Pandanus odoratissimus Linn. f. Suppl. (1781) 424. Pandanus verus Rumph. Herb. Amb. 4: 139, t. 74. Folium baggea Rumph. quoad t. 31.

This common coastal species is not represented in our Amboina collections, yet the reduction, originally made by the younger Linnaeus, is undoubtedly correct; it is to be noted, however, that he reduced to this species "t. 74 ad 81," of which the first and the last are apparently Pandanus tectorius Soland. (P. odoratissimus Linn. f.), but the others represent entirely different species. Table 74 is exceedingly poor, but the description of Pandanus verus Rumph. applies unmistakably to Pandanus tectorius Soland.

PANDANUS TECTORIUS Soland. var. MOSCHATUS (Miq.).

Pandanus tectorius Soland. var. laevis (Kunth) Warb. in Engl. Pflanzenreich 3 (1900) 48.

Pandanus laevis Kunth Enum. 3 (1841) 100 (type!), non Lour. Pandanus moschatus Miq. Fl. Ind. Bat. 3 (1855) 165 (type!). Pandanus moschatus Rumph. Herb. Amb. 4: 147.

I have followed Warburg in the reduction of this Rumphian species, but differ from him in the selection of the varietal name, as I consider *Pandanus laevis* Kunth to be invalidated by *P. laevis* Lour. Loureiro reduced *Pandanus moschatus* Rumph. to *Pandanus laevis* Lour., Fl. Cochinch. (1790) 604, but Loureiro's species is manifestly not the same as the one Rumphius described and is to be interpreted by Cochin-China material. All early authors, however, followed Loureiro in this reduction.

PANDANUS CONOIDEUS Lam. Encycl. 1 (1785) 372 (type!).

Pandanus ceramicus Kunth Enum. 3 (1841) 98 (type!).

Pandanus ceramicus Rumph. Herb. Amb. 4: 149, t. 79.

This species was reported by Rumphius from Ceram, Buru, Gilolo, and Ternate, but not from Amboina except as an introduced and rarely cultivated plant. It is not represented in our Amboina collections. The Rumphian figure and description are the whole basis of both *Pandanus conoideus* Lam. and *P. ceramicus* Kunth; and Warburg, in Engl. Pflanzenreich. 3 (1900) 69, has apparently interpreted the species correctly.

PANDANUS DUBIUS Spreng. Syst. 3 (1826) 897 (type!).

Folium baggea maritimum Rumph. Herb. Amb. 4: 151, t. 80 (non t. 81!).

AMBOINA, Latoehalat, Robinson Pl. Rumph. Amb. 55, September 22, 1913, along the seashore, locally known as haun.

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This very characteristic species, as I interpret the original description by Sprengel, is typified by the Rumphian description and illustration, the reference to the Mascarene Islands being added because of the doubtful reduction of *Pandanus erigens* Thouars (=*Pandanus montanus* Bory). The figure of the single drupe given by Rumphius leaves absolutely no doubt as to the identity of *Pandanus baggea maritimum*.

PANDANUS BAGEA Miq. Fl. Ind. Bat. 3 (1855) 159 (type!). Folium baggea verum Rumph. Herb. Amb. 4: 150.

This form was reduced by Warburg, in Engl. Pflanzenreich 3 (1900) 50, as a synonym of *Pandanus dubius* Spreng., which is apparently wrong. According to the description and habitat given by Rumphius, it cannot possibly be Sprengel's species. It is suspected that it may be a form of *Pandanus tectorius* Soland., and it may be the form of *Pandanus baggea* Rumph. figured on t. 81, which I have referred to *Pandanus tectorius* Soland.

PANDANUS AMBOINENSIS Warb. in Engl. Pflanzenreich 3 (1900) 83.

Pandanus rumphii Warb. in Engl. Pflanzenreich 3 (1900) 84 (type!).

Pandanus montanus Miq. Fl. Ind. Bat. 3 (1855) 161 (type!), non

Pandanus ceramicus Kunth var. sylvestris Kunth Enum. 3 (1841) 98 (type!).

Pandanus silvestris (terrestris II) Rumph. Herb. Amb. 4: 145, t. 77. Amboina, Lateri, Robinson Pl. Rumph. Amb. 31, September 9, 1913, in forests, altitude about 350 meters, locally known as keker saun.

Under Pandanus silvestris Rumphius described two entirely different species, but his illustration manifestly belongs with Pandanus silvestris terrestris II, which is the type of Pandanus montanus Miq., P. rumphii Warb., and the variety sylvestris of Pandanus ceramicus Kunth. The mature cones are about 40 cm long and 8 to 9 cm in diameter. The species is known only from Amboina.

PANDANUS TERRESTRIS Warb. in Engl. Pflanzenreich 3 (1900) 84 (type!), excl. syn. Miquel.

Pandanus sylvestris Miq. Fl. Ind. Bat. 3 (1855) 161 (type!), non Bory.

Pandanus montanus (silvestris I) Rumph. Herb. Amb. 4: 145 (non t. 77!).

Anassa silvestris Rumph. Herb. Amb. 5: 230?

Not represented in our Amboina collections, and a species of very doubtful status. Warburg, in Engl. Pflanzenreich 3 (1900) 84, has erroneously cited the Miquelian synonym, *Pandanus montanus*, under *Pandanus terrestris* Warb., but it properly belongs with *Pandanus amboinensis* Warb. (*P. rumphii* Warb.); the

Rumphian figure cannot belong to *Pandanus terrestris* Warb. according to Rumphius's description, but certainly belongs with *Pandanus amboinensis* Warb. Hasskarl, Neue Schlüssel (1866) 87, has interchanged most of the synonyms cited by him between *terrestris I* and *terrestris II*, citing the plate, with doubt, under both. The brief description given by Rumphius is the whole basis of *Pandanus sylvestris* Miq., non Bory, and *P. terrestris* Warb. The form mentioned by Rumphius as *Anassa silvestris* is unquestionably a *Pandanus* and is probably referable here. No data are given, however, by which its exact status can be determined.

FREYCINETIA Gaudichaud

FREYCINETIA FUNICULARIS (Savigny) comb. nov.

Pandanus funicularis Savigny in Lam. Encycl. 4 (1798) 735 (type!). Freycinetia strobilacea Blume Rumphia 1 (1835) 156.

Pandanus funicularis Rumph. Herb. Amb. 4: 153 t. 82.

AMBOINA, Way tommo, Robinson Pl. Rumph. Amb. 29, August 16, 1913, in forests, altitude about 30 meters, locally known as anapur.

Savigny compiled a description of the species, under the Rumphian binomial, in Lamarck's Encyclopédie 4 (1798) 735, and this manifestly constitutes a valid post-Linnean publication of the biňomial. I have accordingly accepted this specific name in place of Blume's. Blume reduced *Pandanus funicularis* Rumph. to *Freycinetia strobilacea* Blume in the original description of that species, the type being from Amboina. The species is known only from Amboina.

FREYCINETIA GRAMINEA Blume Rumphia 1 (1835) 159 (type!).

Carex arborea Rumph. Herb. Amb. 6: 21, t. 8, f. 2.

Not represented in our Amboina collections unless the sterile *Rel. Robins. 1604* is referable here. *Carex arborea* Rumph. is the whole basis of *Freycinetia graminea* Blume and is apparently known only from the Rumphian description. Linnaeus, Syst. ed. 10 (1759) 865, erroneously referred t. 8, f. 2, to *Schoenus secans* Linn.=*Scleria*; but the Rumphian reference is not the type of the species, and the figure intended by Linnaeus was manifestly t. 8, f. 1, which is a *Scleria*.

FREYCINETIA sp.

Adpendix cuscuaria I angustifolia Rumph. Herb. Amb. 5: 488.

The form described is manifestly some species of *Freycinetia*. This reduction was suggested by Hasskarl, with doubt, Neue Schlüssel (1866) 150. Its further identification is impossible from the meager data given by Rumphius.

HYDROCHARITACEAE

ENHALUS Richard

ENHALUS ACOROIDES (Linn. f.) Rich. ex Steud. Nomencl. ed. 2, 1 (1840) 554; Chatin Anat. Pl. Aquat. (1862) 15, t. 6.

Stratiotes acoroides Linn. f. Suppl. (1781) 268.

Enhalus koenigii Rich. in Mém. Inst. Paris 2 (1811) 78.

Acorus marinus Rumph. Herb. Amb. 6: 191, t. 75, f. 2.

Amboina, Gelala, Robinson Pl. Rumph. Amb. 474, on tidal flats, October 20, 1913.

Acorus marinus Rumph. is the first reference given by the younger Linnaeus in the orginal publication of Stratiotes acoroides Linn. f.; the actual type, however, was a specimen from Ceylon, collected by Koenig. This reduction was followed by Willdenow, Poiret, Persoon, and other authors. Miquel, Fl. Ind. Bat. 3 (1857) 237, cites it under Enhalus koenigii Rich., a synonym of E. acoroides (Linn. f.) Rich.

GRAMINEAE

The comparatively few species of this family considered by Rumphius are chiefly those of economic value, such as the coarser forms, the bamboos, etc. As is to be expected in such a difficult group, it is by no means easy to determine the status of some of the forms considered, this being especially true of the bamboos. Unfortunately numerous species of *Bambusa* have been based wholly on the descriptions or figures given by Rumphius, and these must be interpreted by the data given by him. Until more comprehensive collections are made in the Moluccas with special reference to the descriptions and native names given by Rumphius, the exact status of several of these species must remain doubtful.

ZEA Linnaeus

ZEA MAYS Linn. Sp. Pl. (1753) 971.

Frumentum indicum s. turcicum s. saracenicum Rumph. Herb. Amb. 5: 202.

This is merely mentioned by Burman in a note appended to the description of Panicum indicum s. botton, i. e. Setaria italica (Linn.) Kunth. It is cultivated in all parts of the Malay Archipelago.

COIX Linnaeus

COIX LACHRYMA JOBI Linn. Sp. Pl. (1753) 972.

Lachryma jobi indica Rumph. Herb. Amb. 5: 193, t. 75. Lithospermum amboinicum Rumph. Herb. Amb. 6: 22, t. 9, f. 1.

AMBOINA, Way tommo, along the banks of a stream, Robinson Pl. Rumph. Amb. 40, August 19, 1913, locally known as buli buli.

The plant figured in Volume V of the Herbarium Amboinense was reduced by Linnaeus to Coix lachryma jobi in Stickman Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 130, and in the second edition of his Species Plantarum (1763) 1378, but by error Linnaeus cites Ova piscium of Rumphius, rather than Lachryma jobi indica; the two are figured on the same plate, and the former is referred by Hasskarl to his Saccharum edule. The two figures given by Rumphius represent fairly good habit sketches of the common Job's tears, Coix lachryma jobi Linn. Lithospermum amboinicum was also reduced by Linnaeus, op. cit. 25, 134, to Coix lachryma jobi, but by error t. 8 is cited instead of t. 9, although the Rumphian name is correctly given.

IMPERATA Cyrillo

IMPERATA CYLINDRICA (Linn.) Beauv. Agrost. (1812) expl. pl. 5, t. 5, f. 1, var. KOENIGII (Retz.) Benth. ex Pilger in Perk. Frag. Fl. Philip. (1904) 137.

Saccharum koenigii Retz. Obs. 5 (1789) 16.

Gramen caricosum Rumph. Herb. Amb. 6: 17, t. 7, f. 2A.

Amboina, Hoetoemoeri road, on barren hillsides, Robinson Pl. Rumph. Amb. 39, September 30, 1913.

Gramen caricosum was referred by Linnaeus, Syst. ed. 10 (1759) 869, to his Saccharum spicatum, but later, Sp. Pl. ed. 2 (1763) 1480, to his Andropogon caricosus. The latter species, however, was based on Indian specimens and is a true Andropogon. Although the specific name was taken from Rumphius, the Rumphian figure and description cannot be interpreted as the type. Saccharum spicatum Linn. is in itself a mixture, but probably should be interpreted as an Imperata, not as Perotis latifolia Ait. The erroneous reference of Gramen caricosum to Andropogon caricosus by Linnaeus was followed by Burman f., Fl. Ind. (1768) 218; by Lamarck, Encycl. 1 (1785) 373; and by Willdenow, Sp. Pl. 4² (1805) 902. Loureiro, Fl. Cochinch. (1790) 53, follows the first Linnean reduction and considers it under Saccharum spicatum Linn., while Roxburgh, Fl. Ind. ed. 2, 1 (1832) 234, places it under Saccharum cylindricum Linn. =Imperata cylindrica Beauv.

MISCANTHUS Andersson

MISCANTHUS SINENSIS Anders. in Oefv. Vet. Akad. Forhandl. Stockh. (1855) 166.

Arundo farcta I Rumph. Herb. Amb. 4: 21.

Arundo farcta Rumph. was referred by Linnaeus, with doubt, to Andropogon nardus Linn., Mant. 2 (1771) 500, in which dis-

position of it he was followed by Lamarck, Encycl. 1 (1785) 374. Burman f., Fl. Ind. (1768) 30, however, placed it under Lagurus paniculatus Linn., which species is there properly published, and which is not included in Index Kewensis; it is, however, a synonym of Andropogon nardus Linn. The Rumphian plant, however, has nothing to do with Andropogon nardus, but undoubtedly is a Miscanthus.

MISCANTHUS JAPONICUS (Thunb.) Anders. in Oefv. Vet. Akad. Forhandl. Stockh. (1855) 166.

Saccharum japonicum Thunb. in Trans. Linn. Soc. 2 (1794) 328. Arundo farcta II Rumph. Herb. Amb. 4: 21, t. 6.

Amboina, Hoenoet, on dry hills, altitude about 50 meters, Robinson Pl. Rumph. Amb. 38, October 7, 1913.

The description is short and imperfect, but apparently applies to this species, which, as currently interpreted, is of very wide distribution in eastern Asia and Malaya. It is possible that the species intended by the Rumphian description is *Miscanthus floridulus* (Labill.) Warb., which Warburg considers to be specifically distinct from the northern form, typical *Miscanthus japonicus* Anders. Rumphius describes the plant as from 10 to 12 feet high, while *Arundo farcta I* is described as smaller.

SACCHARUM Linnaeus

SACCHARUM OFFICINARUM Linn. Sp. Pl. (1753) 54.

Arundo saccharifera Rumph. Herb. Amb. 5: 186, t. 74, f. 1, 2. Ova piscium Rumph. Herb. Amb. 5: 191, t. 75, f. 1?

The common sugar cane is not represented in our Amboina collections. Three or four distinct varieties are considered by Rumphius, under such names as alba, fusca, rotanga, etc. reduction of Arundo saccharifera Rumph. to Saccharum officinarum was made by Linnaeus in Stickman's Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 869, Sp. Pl. ed. 2 (1762) 79, followed by various authors. Neue Schlüssel (1866) 110, has carried the reduction of the various forms described by Rumphius to varieties, and considers Arundo saccharifera III, tabu rottang (expl. pl.) to represent Saccharum sinense Roxb. However, Hackel, apparently correctly, reduces Saccharum sinense Roxb, to S. officinarum Linn. Ova piscium Rumph., referred by Hasskarl to Saccharum edule Hassk., is probably a form of Saccharum officinarum Linn. It was, by error, referred by Linnaeus to Coix lachryma jobi L., but Linnaeus manifestly intended figure 2 of plate 75, rather than figure 1.

ISCHAEMUM Linnaeus

ISCHAEMUM TIMORENSE Kunth Rév. Gram. 1 (1835) 369, t. 98.

Hippogrostis amboinica I major Rumph. Herb. Amb. 6: 14, t. 5, f. 2? Amboina, Batoe mera, along ditches, Robinson Pl. Rumph. Amb. 47, July 20, 1913.

This figure has been confused by some authors with *Panicum colonum* Linn., and Hasskarl, Neue Schlüssel (1866) 153, so refers it. I am not quite certain that it is referable to *Ischaemum timorense* Kunth., but it surely is not *Panicum colonum* Linn., although Hasskarl was apparently satisfied with this reference of it.

ANDROPOGON Linnaeus

ANDROPOGON ACICULATUS Retz. Obs. 5 (1789) 22.

Rhaphis trivialis Lour. Fl. Cochinch. (1790) 553. Gramen aclculatum Rumph. Herb. Amb. 6:13, t. 5, f. 1.

Amboina, Amahoesoe, along roadsides, Robinson Pl. Rumph. Amb. 45, August 13, 1913, locally known as rumput gintang.

Linnaeus, Species Plantarum ed. 2 (1762) 84, erroneously referred $Gramen\ aciculatum\$ to $Panicum\ colonum\$ Linn., but while citing the name $Gramen\ aciculatum\$ he gives the figure as $t.\ 5,\ f.\ 3$, which is apparently an Oplismenus. Loureiro cites $Gramen\ aciculatum\$ in his description of $Rhaphis\ trivialis$, Fl. Cochinch. (1790) 553; Willdenow, Sp. Pl. 1 (1797) 338, repeats Linnaeus's error in referring it to $Panicum\ colonum$, citing the Rumphian name, but $t.\ 5,\ f.\ 3$, as does Linnaeus, but later, op. cit. $4^{\,2}\ (1805)\ 906$, refers $Gramen\ aciculatum\ t.\ 5,\ f.\ 1$, to $Andropogon\ acicularis\$ Willd.= $A.\ aciculatus\$ Retz. Rumphius's figure is an excellent one.

ANDROPOGON SORGHUM (Linn.) Brot. Fl. Lusit. (1804) 89, var. Holcus sorghum Linn. Sp. Pl. (1753) 1047. Sorghum s. Battari Rumph. Herb. Amb. 5: 194, t. 75 bis, fig. 1.

This is not represented in our Amboina collections. The form described and crudely figured by Rumphius is apparently the one described by Linnaeus as *Holcus saccharatus=Andropogon sorghum* var. *saccharatus* Hack. It was reduced to *Holcus saccharatus* by Linnaeus in Stickman Herb. Amb. (1754) 20, followed in Amoen. Acad. 4 (1759) 130 (plate cited as 74 by error), Syst. ed. 10 (1759) 1305, followed by Loureiro, Fl. Cochinch. (1790) 645, and Willdenow, Sp. Pl. 4 ² (1805) 930. Burman f., however, Fl. Ind. (1768) 220, refers it to *Holcus sorghum* Linn., in which he is followed by Lamarck, Encycl. 3 (1789) 140. Following Hackel's classification, it is probably best placed under

Andropogon sorghum Brot., subsp. sativus Hack. var. saccharatus (L.) Hack. Following other authors, it is considered under the generic name Sorghum, while Hitchcock proposes to recognize the genus Holcus for the sorghums, and retains the Linnean names, Holcus sorghum, H. saccharatus, etc.; Holcus of authors, as typified by the European Holcus lanatus Linn., becomes Nothoholcus.

ANDROPOGON AMBOINICUS (Linn.) comb. nov.

Poa amboinica Linn. Mant. 2 (1771) 557 (type!).

Poa amboinensis Murr. in Linn. Syst. ed. 13 (1774) 98 (type!).

Eragrostis amboinensis Trin. ex Steud. Nomencl. ed. 2, 1 (1840) 562 (type!).

Phoenix amboinica montana Rumph. Herb. Amb. 6: 19, t. 7, f. 3.

Amboina, Soja road, on grassy hillsides, altitude 300 meters, Robinson Pl. Rumph. Amb. 43, August 1, 1913.

The specimen agrees perfectly with the description given by Rumphius, and sufficiently well with the figure, which is rather crude. The species has not been previously recognized, and *Poa amboinica* Linn.=*Poa amboinensis* Murr. is reduced in Index Kewensis to *Eragrostis amboinensis* Trin., this being merely a transfer of the specific name by Steudel. *Poa amboinica* Linn. is based wholly on Rumphius's description and figure from which the species must be interpreted.

Andropogon amboinicus (Linn.) Merr., if interpreted in a broad sense, is identical with Andropogon serratus Thunb.; and, if Hackel be followed in considering Thunberg's species as including several varieties, the Linnean specific name will replace Thunberg's. However, Andropogon amboinicus is apparently the form mentioned by Hackel under Andropogon serratus Thunb. var. genuinus Hack. subvar. major Hack. in DC. Monog. Phan. 6 (1889) 521. The Amboina specimen differs radically from typical Andropogon serratus Thunb. in its long-pilose sheaths and larger spikelets and probably should be considered specifically distinct.

ANDROPOGON CITRATUS DC. Cat. Hort. Monsp. (1813) 78; Nees in Allgem. Gartenzeit. 3 (1835) 266.

Cymbopogon citratus Stapf in Kew Bull. (1906) 322, 357, plate. Schoenanthemum ambolnicum Rumph. Herb. Amb. 5: 181, t. 72, f. 2.

This species is not represented in our Amboina collections. For a very full discussion of it the student is referred to Doctor Stapf's article.* Schoenanthemum amboinicum has very generally been confused with Andropogon schoenanthus Linn.; in

^{*} The oil-grasses of India and Ceylon. Kew Bull. (1906) 297-364.

fact one year after Andropogon schoenanthus was published, Linnaeus himself referred to it the Rumphian figure in Stickman's dissertation on the Herbarium Amboinense (1754) 20, which was repeated in Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1304; in Murray's edition of the Systema Vegetabilium (1774) 758; by Loureiro, Fl. Cochinch. (1790) 646; and by Burman f., Fl. Ind. (1768) 219; the last author also in the same work, page 24, erroneously referring it to Panicum polystachion Linn.

ANDROPOGON EXALTATUS R. Br. Prodr. (1810) 202.

Schoenanthemum alterum Rumph. Herb. Amb. 5: 182?

AMBOINA, Silali, on barren hills, altitude 125 meters, Robinson Pl. Rumph. Amb. 46, September 22, 1913, locally known as kusu kusu.

Hasskarl has suggested Andropogon circinnatus Hochst. as the possible place for this form briefly mentioned by Rumphius. As what I take to be a form of Andropogon exaltatus R. Br. occurs in Amboina and as this has fragrant leaves, I merely make the suggestion that it may be the species intended by Rumphius. The species has been previously reported only from Australia and from Thursday Island.

THEMEDA Forskål

THEMEDA FRONDOSA (R. Br.) comb. nov.

Anthistiria frondosa R. Br. Prodr. (1810) 200.

Themeda arguens Hack. in DC. Monog. Phan. 6 (1889) 657, non Stipa arguens Linn.

Gramen arguens Rumph. Herb. Amb. 6: 15, t. 6, f. 1.

Amboina, Way tommo, in waste places, Robinson Pl. Rumph. Amb. 62, August 16, 1913. Celebes, Macassar, Rel. Robins. 2452, July 11, 1913.

The type of *Stipa arguens* Linn. was an Indian specimen, although the specific name was taken from Rumphius, and *Gramen arguens* Rumph. is cited in the original description. The actual type, in the Linnean herbarium, is the form described by Hackel as *Themeda ciliata* (Linn. f.) Hack., to which the name *Themeda arguens* must now be applied. The Linnean description was manifestly based on the specimen before him, not on the Rumphian illustration; and, accordingly, the name should go with the plant he described. The error in referring the Rumphian illustration to the Indian species was a very natural one.

THEMEDA GIGANTEA (Cav.) Hack. in DC. Monog. Phan. 6 (1889) 670.

Anthistiria gigantea Cav. Ic. 5 (1799) 36, t. 458.

Calamagrostis Rumph. Herb. 6: 16, t. 6, f. 2.

This species is not represented in our Amboina collections, but

the above disposition of Rumphius's Calamagrostis is suggested as its probable true position. Linnaeus, Sp. Pl. ed. 2 (1762) 65, referred it to his Schoenus lithospermus=Scleria lithosperma Sw., in which he was followed by Burman f., Fl. Ind. (1768) 19. Willdenow, however, Sp. Pl. 4 (1805) 315, referred it to Scleria tessellata Willd., in which he has been followed by several other authors. The plant, as described by Rumphius, has nothing to do with Scleria, but is manifestly a coarse grass, and it is certainly Anthistiria gigantea Hack., as suggested above. The figure is very poor.

DIGITARIA Scopoli

DIGITARIA SANGUINALIS (Linn.) Scop. Fl. Carn. ed. 2, 1 (1772) 52, var.

Panicum sanguinale Linn. Sp. Pl. (1753) 57.

Gramen caninum Rumph. Herb. Amb. 6:11.

Gramen supplex Rumph. l. c. 12?

Amboina, in sago swamp near the town of Amboina, Robinson Pl. Rumph. $Amb.\ 50,\ August\ 20,\ 1913.$

This is apparently *Gramen caninum* Rumph., described as having two spikes. *Gramen supplex* Rumph. is described as having three or four spikes. Both appear to be merely forms of the polymorphous *Digitaria sanguinalis* (Linn.) Scop.

PANICUM Linnaeus

PANICUM REPTANS Linn. Syst. ed. 10 (1759) 870.

Panicum prostratum Lam. Ill. 1 (1791) 171.

Gramen anatum Rumph. Herb. Amb. 6:13.

BOETON, Rel. Robins. 2496, July 13, 1913; not represented in the Amboina collection.

In this reduction of *Gramen anatum* I follow Hasskarl's suggestion, who refers it with doubt to *Panicum prostratum* Lam. I can see no reason for considering the Rumphian plant other than this species; the Linnean name is, however, the older.

PANICUM STAGNINUM Retz. Obs. 4 (1786) 17.

Champeu s. Campee, Rumph. Herb. Amb. 6: 11.

The description is very brief, but probably *Panicum stagninum* Retz. is the form intended. Hasskarl has suggested *Panicum limnaeum* Steud., but this is very improbable, *P. limnaeum* Steud. being reduced in Index Kewensis to *Panicum molle* Sw. The material considered by Rumphius was from Batavia, Java. Koorders, Exkurs. Fl. Java 1 (1911) 129, gives *tjampea* as the Sundanese name for *Panicum stagninum* Retz.

PANICUM PALMAEFOLIUM Koenig in Naturf. 23 (1788) 208.

Angraecum terrestre alterum Rumph. Herb. Amb. 6: 115?

The description is rather indefinite, but apparently applies to *Panicum palmaefolium* Koenig. The reduction follows Hasskarl's suggestion, Neue Schlüssel (1866) 171, who thought that it was either *Panicum palmaefolium* Koenig or *P. nepalense* Spreng.

OPLISMENUS Beauvois

OPLISMENUS COMPOSITUS (Linn.) Beauv. Agrost. (1812) 54.

Panicum compositum Linn. Sp. Pl. (1753) 57.

Hippogrostis amboinica II minor Rumph. Herb. Amb. 6: 14, t. 5, f. 3.

Linnaeus, Amoen. Acad. 4 (1759) 133, reduced Hippogrostis amboinica to Panicum colonum, merely citing the number of the plate. There are three figures on the plate: one, Andropogon aciculatus Retz., that manifestly Linnaeus did not intend to refer to Panicum colonum: two, what I take to be Ischaemum timorense Kunth, and which does not resemble Panicum colonum: and three, what I take to represent Oplismenus compositus Beauv., probably the figure that Linnaeus intended to refer to Panicum colonum. However, it certainly is not this species. Later, Linnaeus did refer t. 6, f. 3, to Panicum patens, Mant. 2 (1771) 323, apparently following Burman f., Fl. Ind. (1768) 26, but Panicum patens Burm. f. has nothing to do with Panicum patens Linn. Lamarck, Encycl. 4 (1798) 742, refers it to his Panicum bromoides, which is presumably the same as Oplismenus burmannii Beauv. Oplismenus compositus Beauv. does not appear in our Amboina collections, but O. burmannii Beauv. is represented by Rel. Robins. 1645, collected in forests at Ayer putri, July 29, 1913. It does not however, agree with Rumphius's description of *Hippogrostis amboinica* or with the figure cited above.

SETARIA Beauvois

SETARIA FLAVA (Nees) Kunth Rev. Gram. 1 (1829) 46.

Panicum flavum Nees in Mart. Fl. Bras. 2 (1829) 180.

Panicum polystachion Linn. Syst. ed. 10 (1759) 870, Sp. Pl. ed. 2 (1762) 82 (type!), non Setaria polystachya Schrad., nec Scheele.
 Panicum vulpinum Linn. Amoen. Acad. 4 (1759) 134 (type!), non Willd., nec Setaria vulpina Beauv.

Gramen vulpinum Rumph. Herb. Amb. 6: 18, t. 7, f. 2B.

Amboina, Soja road, Lateri, and Gelala, Robinson Pl. Rumph. Amb. 41, August, September, 1913.

The Rumphian reference is the whole basis of both Panicum vulpinum Linn., which does not appear in Index Kewensis, and

Panicum polystachion Linn., the former based on "Gramen caricosum vulpinum" the latter on Vol. VI "t. 7, f. 2B," and erroneously reduced in Index Kewensis to Andropogon caricosum L. Both Linnean specific names are invalid in Setaria, although both are much older than Panicum flavum Nees. By Burman f., Fl. Ind. (1768) 24, it was considered under Panicum polystachion Linn., and it was also so considered by Loureiro, Fl. Cochinch. (1790) 46. The species is very generally considered to be a synonym of Setaria glauca (Linn.) Beauv., but is apparently distinct.

SETARIA ITALICA (Linn.) Beauv. Agrost. (1812) 51.

Panicum italicum Linn. Sp. Pl. (1753) 56.

Panicum indicum Rumph. Herb. Amb. 5: 202, t. 75 bis, f. 2.

The figure is a good representation of one of the commonly cultivated forms of this species, with the addition of the panicle of another form. It was reduced to *Panicum italicum* by Linnaeus in Stickman Herb. Amb. (1754) 20, repeated in Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 870, Sp. Pl. ed. 2 (1762) 83; followed by Burman f., Fl. Ind. (1768) 24, Loureiro, Fl. Cochinch. (1790) 46, Willdenow, Sp. Pl. 1 (1797) 336, and other authors. For a critical botanical consideration of the numerous varieties and forms of *Setaria italica* see Hubbard in Am. Journ. Bot. 2 (1915) 169–198.

THUAREA Persoon

THUAREA INVOLUTA (Forst.) R. Br. ex Steud. Nomencl. ed. 2, 2 (1841) 682.

Ischaemum involutum Forst. Prodr. (1786) 73.

Thuarea sarmentosa Pers. Syn. 1 (1805) 110.

Gramen roris (litoreum) Rumph. Herb. Amb. 6: 13.

Amboina, Hatiwe, along the strand, Robinson Pl. Rumph. Amb. 51, September 4, 1913.

The description is very short, and the identification has been made chiefly from the indicated habitat. Hasskarl refers here *Gramen roris* as described on page 12 and is perhaps correct in doing so. R. Brown, Prodr. (1810) 197, does not publish *Thuarea involuta* as currently indicated in botanical literature, but merely indicates that *Ischaemum involutum* Forst. pertains to the genus *Thuarea*.

SPINIFEX Linnaeus

SPINIFEX LITTOREUS (Burm. f.) Merr. in Philip. Journ. Sci. 7 (1912) Bot. 229.

Stipa littorea Burm. f. Fl. Ind. (1768) 29.

Stipa spinifex Linn. Mant. 1 (1767) 84.

Spinifex squarrosus Linn. Mant. 2 (1771) 300.

Cyperus littoreus Rumph. Herb. Amb. 6:6, t. 2, f. 2.

This species is not represented in our Amboina collection. It is a very widely distributed grass, occurring on sandy beaches in the Indo-Malayan region, and Rumphius gives a good figure of the pistillate plant. Cyperus littoreus is, by citation, the type of Stipa littorea Burm. f., and the specific name is taken from Rumphius; however, it is perfectly evident that Burman f. also had actual specimens of the same plant. It is also cited by Linnaeus in the original publication of Stipa spinifex Linn., Mant. 1 (1767) 34, and under Spinifex squarrosus Linn. by Willdenow, Sp. Pl. 4² (1805) 1129; by Loureiro, Fl. Cochinch. (1790) 647; and by other authors.

ORYZA Linnaeus

ORYZA SATIVA Linn. Sp. Pl. (1753) 333.

Oryza vulgaris Rumph. Herb. Amb. 5: 196. Oryza glutinosa Rumph. op. cit. 201.

Rice is not represented in our Amboina collections. Six forms are described under Oryza vulgaris, and three under Oryza glutinosa, but all are manifestly cultural forms of the polymorphous species Oryza sativa Linn. Oryza communissima Lour., O. praecox Lour., O. montana Lour., and O. glutinosa Lour., Fl. Cochinch. (1790) 215, while based primarily on specimens from China or Cochin-China, all have references to Rumphius. Linnaeus, by error, refers t. 74 to Oryza, in Amoen. Acad. 4 (1759) 130. Table 74 is Saccharum officinarum, while table 75 bis, the plate apparently intended by Linnaeus, represents a form of Andropogon sorghum Linn, and Setaria italica Kunth; table 75 represents Coix lachryma jobi Linn, and apparently a form of Saccharum officinarum, probably the species proposed by Hasskarl as Saccharum edule Hassk. The common rice plant is not figured by Rumphius.

CYNODON * Persoon

CYNODON DACTYLON (Linn.) Pers. Syn. 1 (1804) 85.

Panicum dactylon Linn. Sp. Pl. (1753) 58. Capriola dactylon O. Ktze. Rev. Gen. Pl. 1 (1891) 764. Gramen repens minus Rumph. Herb. Amb. 6:11.

This common and widely distributed species is not represented in our Amboina collection. Hasskarl has made this reduction of *Gramen repens minus* with doubt, but it is perfectly evident that *Cynodon dactylon* Pers. is the plant described by Rumphius.

^{*} Retained name, Vienna Code; Capriola Adans. (1763) is older.

ELEUSINE Gaertner

ELEUSINE INDICA (Linn.) Gaertn. Fruct. 1 (1781) 8.

Cynosurus indicus Linn. Sp. Pl. (1753) 72.

Gramen vaccinum Rumph. Herb. Amb. 6:9, t. 4, f. 2.

AMBOINA, Batoe mera, in ditches and along roadsides, Robinson Pl. Rumph. Amb. 48, July 20 and August 15, 1913.

This common and widely distributed grass is well represented by Rumphius's figure, which was first referred by Linnaeus, Sp. Pl. ed. 2 (1762) 106, to *Cynosurus indicus*, in which he has been followed by Burman f., Fl. Ind. (1768) 29; by Lamarck, Encycl. 2 (1786) 187; by Loureiro, Fl. Cochinch. (1790) 59; by Willdenow, Sp. Pl. 1 (1797) 417—all under *Cynosurus*—and by Hasskarl, Neue Schlüssel (1866) 152, under *Eleusine*. The figure is not cited in modern literature.

ELEUSINE COROCANA (Linn.) Gaertn. Fruct. 1 (1781) 8, t. 1.

Cynosurus corocanus Linn. Syst. ed. 10 (1759) 875.

Goddam Rumph. Herb. Amb. 6: 10.

Pinicum gramineum Rumph. Herb. Amb. 5: 203, t. 76, f. 2.

Rumphius figured this species from plants grown in Amboina, the seeds having been received by him from Ceylon; it is considered by Hooker f. to be a cultivated form of *Eleusine indica* Gaertn. The figure given by Rumphius was first referred to this species by Linnaeus, Syst. ed. 10 (1759) 875, repeated in his Sp. Pl. ed. 2 (1762) 107; followed by Burman f., Fl. Ind. (1768) 29, by Lamarck, Encycl. 2 (1786) 187, and by Willdenow, Sp. Pl. 1 (1797) 415—all under *Cynosurus corocanus* Linn.—and finally by Hasskarl, Neue Schlüssel (1866) 111. Rumphius's figure is not generally cited by modern authors. The Javan form very briefly described by Rumphius as *Goddam* can scarcely be other than *Eleusine corocana* Gaertn.

DACTYLOCTENIUM Willdenow

DACTYLOCTENIUM AEGYPTIUM (Linn.) Richt. Pl. Europ. 1 (1889) 68.

Cynosurus aegyptius Linn. Sp. Pl. (1753) 72.

Gramen vaccinum femina Rumph. Herb. Amb. 6: 9, 10, t. 4, f. 1.

Amboina, Batoe mera, along roadsides, Robinson Pl. Rumph. Amb. 49, August 15, 1912.

This common grass is fairly well represented by Rumphius's figure, although the prolonged rachis is not shown. The habit, together with the relatively thick spikes, unquestionably places the figure cited with *Dactyloctenium* rather than with *Eleusine indica* Gaertn. The figure was first referred here by Linnaeus, in Stickman Herb. Amb. (1754) 25, Amoen. Acad. 4 (1759)

133, Syst. ed. 10 (1759) 875; and later by Loureiro, Fl. Cochinch. (1790) 59, by Roxburgh, Fl. Ind. ed. 2, 1 (1832) 344—all under Cynosurus—and finally by Hasskarl, Neue Schlüssel (1866) 152, as Dactyloctenium aegyptiacum Willd. 'The figure is rarely cited in modern literature. The species usually appears in literature as Dactyloctenium aegyptiacum Willd.

PHRAGMITES Trinius

PHRAGMITES VULGARIS (Lam.) Trin. Fund. Agrost. (1820) 134.

Arundo vulgaris Lam. Fl. Franc. 3 (1778) 615. Arundo phragmites Linn. Sp. Pl. (1753) 81.

Canna palustris Rumph. Herb. Amb. 4: 20, t. 5.

Amboina, Wakal, near the beach, Robinson Pl. Rumph. Amb. 44, November 5, 1913, known as tebu-tebu.

Rumphius describes Canna palustris as from 12 to 16 feet high; Robinson notes that his plant, cited above, is from 3 to 4 meters high. Both may be referable to Phragmites karka (Retz.) Trin., rather than to P. vulgaris Trin. Loureiro, Fl. Cochinch. (1790) 54, erroneously considers it under Aira arundinacea Linn. Hasskarl, Neue Schlüssel (1866) 71, has reduced Canna palustris Rumph., with doubt, to Eulalia japonica Trin. =Miscanthus japonicus Anders.; this suggested reduction is impossible, however, as the habitat and other data given by Rumphius apply to Phragmites, not to Miscanthus. The figure of Canna palustris is very crude, and the true position of the species has not before been recognized.

ERAGROSTIS Host

ERAGROSTIS AMABILIS (Linn.) W. & A. in Hook. & Arn. Bot. Beech. Voy. (1841) 251, excl. descr.

Poa amabilis Linn. Sp. Pl. (1753) 68.

Poa tenella Linn. Sp. Pl. (1753) 69.

Eragrostis plumosa Link Hort. Berol. 1 (1827) 192.

Eragrostis tenella R. & S. Syst. 2 (1817) 576. Gramen fumi Rumph. Herb. Amb. 6: 11, t. 4, f. 3.

BALI, Rel. Robins. 2515, 2532, July 7, 1913, but not represented in the Amboina collection.

Gramen fumi was reduced by Linnaeus to Poa tenella Linn., Sp. Pl. ed. 2 (1762) 101, in which he was followed by Burman f., Fl. Ind. (1768) 28, Poiret in Lam. Encycl. 5 (1804) 85, and by various other authors. Roxburgh, Fl. Ind. ed. 2, 1 (1832) 337, refers it to Poa plumosa Retz.=Eragrostis plumosa Link =Eragrostis amabilis (Linn.) W. & A. Poa amabilis Linn. is identical with the species commonly known as Eragrostis tenella

R. & S. and E. plumosa Link. Poa tenella Linn. was based on specimens from India and is identical with Poa amabilis Linn.; see Munro in Journ. Linn. Soc. Bot. 6 (1862) 43. It is to be noted that in transferring the Linnean specific name to Eragrostis, as E. amabilis, Wight and Arnott describe a form that is totally distinct from Poa amabilis Linn. and is Eragrostis unioloides Nees. The specific name amabilis manifestly belongs with the plant originally described by Linnaeus, not with Eragrostis unioloides Nees.

BAMBUSEAE

Under the names Arundo and Arundarbor, Rumphius has described a number of species and forms of bamboo, which have been very imperfectly understood by later authors, although many species have been based, wholly or in part, on Rumphius's These numerous species, chiefly proposed by descriptions. Loureiro, Roemer and Schultes, and Miquel, have remained doubtful, almost without exception, to the present time. Amboinian material presents four distinct species, three of which were described by Rumphius, and this material has enabled me to solve several problems in synonymy and definitely to determine the status of a number of specific names in various genera that have been based on Rumphius. The others have been interpreted from the data given by Rumphius, but much field work is necessary before a sufficient amount of data is available properly to interpret the numerous forms named by Rumphius. In this connection it is to be noted that it has been possible definitely to determine the status of every species of bamboo described by Blanco from the Philippines, a total of eight, from field work in connection with Blanco's descriptions and the native names cited by him; yet Blanco's descriptions, on the average, are decidedly inferior to those of Rumphius. Up to 1900 not one of Blanco's species had been definitely placed, those that were considered at all appeared in literature as species of doubtful status. It is confidently expected that the status of most of the species based on Rumphius can be definitely settled by following the policy adopted in the Philippines in working out the identity of Blanco's species. The specimens cited below, with the exception of Bambusa spinosa Roxb., of which there were no duplicates, have been critically examined by Mr. J. Sykes Gamble, to whom I am under obligations for his valuable notes, both in connection with the identity of the forms with the Rumphian descriptions and with the names in current use for the several species.

BAMBUSA Schreber

BAMBUSA SPINOSA Roxb. Hort. Beng. (1814) 25 (type!).

Bambusa spinosa Blume ex Nees in Flora 8 (1825) 580. Bambusa blumeana Schultes f. Syst. 7 2 (1830) 1343. Bambusa teba Miq. Fl. Ind. Bat. 3 (1857) 418 (type!). Arundarbor spinosa Rumph. Herb. Amb. 4: 14, t. 3.

AMBOINA, back of the town of Amboina, Robinson Pl. Rumph. Amb. 608, July 17, 1913, locally known as bambu duri.

There is no question that this is Arundarbor spinosa of Rumphius, and that it is identical with the widely distributed Malayan Bambusa blumeana Schultes f. However, Bambusa spinosa Roxb. was based wholly on Rumphius in the original place of publication, Hortus Bengalensis (1814) 25, by citation of "H. A. 4. t. 3;" that is, Herbarium Amboinense Vol. IV, t. 3. Robinson,* however, states (p. 418): "Bambusa spinosa Roxb., as typified by Herb. Amb. 4: pl. 3, is probably not B. arundinacea Willd., and there are various points in Rumphius's description, which oppose its identification as B. Blumeana Schultes f." Munro † states under Bambusa blumeana Schultes f.: "Blume states that this plant is spinous; and there are some traces of spines on the specimens I have seen; but there is nothing to indicate that it is as spinous as B. agrestis of Poir. and Arundarbor spinosa of Rumph. are described to be." From an examination of the Amboina specimen, Rumphius's description, and with a definite knowledge of this plant as it grows in the field, for it is one of the commonest bamboos in the Philippines, I am thoroughly convinced that Arundarbor spinosa is identical with Bambusa blumeana Schultes f., but under our rules of nomenclature, the oldest valid specific name is Bambusa spinosa Roxb. The plant is remarkable for the dense thicket of interlaced, stiff, very spiny branches that surrounds the lower parts of the culms, and these are well represented by Rumphius's figure. Ordinary herbarium specimens, taken from the upper leafy branches often do not present spines, or at least only few and greatly reduced ones, which accounts for Munro's statement, as he saw only herbarium specimens and did not know the plant in the field.

By Loureiro Arundarbor spinosa was reduced to his Arundo agrestis, Fl. Cochinch. (1790) 57, but Arundo agrestis Lour. was based on specimens from Cochin-China, and apparently is Bam-

^{*} Robinson, C. B. Roxburgh's Hortus Bengalensis. Philip. Journ. Sci. 7 (1912) Bot. 410-419.

[†] Trans. Linn. Soc. 26 (1870) 102.

busa arundinacea Retz., not B. blumeana Schultes f. Loureiro's species was transferred to Bambusa as B. agrestis Poir. in Lam. Encycl. 8 (1808) 704. Munro includes Loureiro's species in the synonymy of Bambusa blumeana Schultes f., with doubt; I am convinced that it should be transferred to Bambusa arundinacea Retz. Bambusa teba Miq. is based wholly on Rumphius, for Miquel cites as synonyms Arundo agrestis Lour. and Bambusa agrestis Poir., specifically excluding all data given by these authors except the Rumphian synonym, Arundarbor spinosa Rumph.

BAMBUSA ATRA Lindl. in Penny Cyclop. 3 (1835) 357 (type!).

Bambusa prava Lindl. l. c. (type!).

Bambusa picta Lindl. l. c. (type!).

Leleba alba, nigra, prava, et lineata Rumph. ex R. & S. Syst. 7 ² (1830) 1345, 1346.

Bambusa tenuis Munro in Trans. Linn. Soc. 26 (1868) 119 (type!). I eleba rumphiana Kurz Cat. Hort. Bogor. (1866) 20 (type!).

Rambusa rumphiana Kurz in Journ. As. Soc. Beng. 39 2 (1870) 86. Eambusa lineata Munro in Trans. Linn. Soc. 26 (1868) 118 (type!).

Arundarbor tenuis Rumph. Herb. Amb. 4:1, t. 1 (incl. alba, nigra, lineata, et prava).

Amboina, Way tommo, Robinson Pl. Rumph. Amb. 32, August 18, 1913; Caju poeti, Pl. Rumph. Amb. 33, August 2, 1913; Lateri, Robinson Pl. Rumph. Amb. 34, September 5, 1913; all known as leleba.

The synonymy of this species is rather complicated, but *Bambusa atra* Lindl., 1835, based on *Leleba nigra*, is apparently the oldest valid specific name. It is to be noted that the several forms described by Rumphius under the designations *Leleba nigra*, prava, picta, lineata, and amahussana are repeated by Roemer and Schultes, Syst. 7² (1830) 1345, 1346, under the Rumphian names in a note following *Bambusa verticillata* Willd. "Publication" was not intended, nor have Roemer and Schultes's names been recognized as published.

Regarding the actual specimens cited above, Mr. Gamble writes as follows: "I make Nos. 32, 33, 34 all Bambusa rumphiana Kurz. In my Bambuseae of British India* I described this as Bambusa lineata Munro, but after publication Sir D. Brandis pointed out to me that Munro's B. lineata only referred to one of Rumphius's varieties, while Kurz's name included them all. So I agree with him, but it is best to take Kurz's name. No. 32, I agree, fits best with Rumphius's Arundo arbor tenuis nigra, and No. 33 with A. tenuis alba; so too No. 34, with very broad leaves, will do for A. tenuis prava."

^{*} Ann. Bot. Gard. Calcutta 7 (1896) 1-133, t. 1-118.

Historically, the first reference to Arundo arbor tenuis is found in Loureiro's Flora Cochinchinensis (1790) 58, where he refers it to his Arundo multiplex. However, Arundo multiplex Lour. was primarily based on specimens from Cochin-China and of course must be interpreted from Cochin-China material. It is Bambusa multiplex Raeusch, a species of doubtful status, which Munro suggests closely approaches Bambusa nutans Wall. Willdenow erroneously referred the Rumphian species to his Bambusa verticillata, Sp. Pl. 2 (1799) 245, in which he was followed by many authors. Willdenow's species, however, was based on actual specimens, has nothing to do with the Rumphian plant, and is Gigantochloa verticillata Munro. All of the synonyms cited above, except Bambusa rumphiana Kurz and B. lineata Munro, have previously been considered to represent species of doubtful status.

Var. AMAHUSSANA (Lindl.) comb. nov.

Bambusa amahussana Lindl. in Penny Cycl. 3 (1835) 357 (type!). Bambusa rumphiana Kurz, var. amahussana Gamble in lit.

Arundarbor amahussana (i. e. Leleba amahussana) Rumph. Herb. Amb. 4: 3.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 35, July 30, 1913, near the beach, 2 to 3 m high, often reclining, locally known as bambu nitu.

Regarding this form Mr. Gamble writes as follows: "No. 35 is identified, with much probability, with Arundarbor tenuis amahussana. It comes from Amahoesoe and differs from the others in the small spikelets. It is, I think, quite a distinct variety, but only a variety, for dissection of the flowers presents no differential characters. It is characterized by its very small spikelets."

In connection with the various forms of this species it is well to note that Kurz* has enumerated five varieties under the Malayan names, Leleba dyahat, pootee, ietam, tootool, and soorat.

BAMBUSA VULGARIS Schrad. in Wendl. Collect. Pl. 2 (1810) 26, t. 47.

Bambusa fera Miq. Fl. Ind. Bat. 3 (1855) 418 (type!).

Bambusa vasaria Munro in Trans. Linn. Soc. 26 (1870) 122 (type!)? Arundarbor fera Rumph. Herb. Amb. 4:16, t. 4.

Arundarbor vasaria s. Bulu Java Rumph. Herb. Amb. 4: 8?

Arundarbor fera Rumph. is the whole basis of Bambusa fera Miq., and it seems to be typical Bambusa vulgaris Schrad., a disposition of it suggested by Miquel. Loureiro, Fl. Cochinch. (1790) 57, referred it to Arundo mitis Lour., a species typified

^{*} Ind. Forester 1: 341.

by Cochin-China specimens. Bambusa mitis Poir., in Lam. Encycl. 8 (1808) 704, is merely a new name for Arundo mitis Lour. Loureiro's specimens were from plants cultivated in Cochin-China, and the species may well be the same as Bambusa vulgaris Schrad., in which case the specific name mitis will have priority. In proposing Bambusa fera, Miquel explicitly excludes from the synonyms cited all but the reference to Rumphius.

Arundarbor vasaria s. Bulu Java Rumph. is the whole basis of Bambusa vasaria Munro and is probably the same as Bambusa vulgaris Schrad. Munro suggested that it might be the same as Bambusa balcooa Roxb., but the distribution of the latter, known only from India, makes this reduction an impossible one. Schultes quotes it under Bambusa arundinacea Retz., Loureiro under Arundo bambos Lour., while Miquel, Fl. Ind. Bat. 3 (1855) 417, thinks that it may be Bambusa vulgaris Schrad. Arundarbor vasaria cho Rumph. 4: 10, may also belong here. Under Arundarbor vasaria Rumphius describes several other forms, on which, fortunately, subsequent botanists have based no binomials, either wholly or in part. From the data at present available it is impossible to determine their status, and they are accordingly not listed here. The full list is given by Hasskarl, Neue Schlüssel (1866) 69-71.

BAMBUSA VULGARIS Schrad. var. STRIATA (Lodd.) Gamble in Ann. Bot. Gard. Calcutta 7 (1896) 44.

Bambusa striata Lodd. ex Lindl. Penny Cyclop. 3 (1835) 357. Arundarbor fera elegantissima Rumph. Herb. Amb. 4: 16.

The description given by Rumphius applies unmistakably to this form of *Bambusa vulgaris* Schrad., which is widely cultivated in the tropics of the Old World for ornamental purposes.

BAMBUSA EXCELSA Miq. Fl. Ind. Bat. 3 (1855) 418 (type!).

Arundarbor maxima Rumph, Herb. Amb. 4: 12.

Loureiro, Fl. Cochinch. (1790) 58, referred Arundarbor maxima Rumph. to Arundo maxima Lour., but his description was based on Cochin-China specimens, which probably represent a species quite different from the one Rumphius described. Poiret, in Lam. Encycl. 8 (1808) 704, transferred it to Bambusa maxima Poir. Miquel, however, in proposing the name Bambusa excelsa, specifically excludes from the descriptions of Loureiro and Poiret everything except the references to Rumphius; Melocanna excelsa Roep., in Trin. Clav. Agrost. (1822) 105, which probably goes with Arundarbor maxima Lour., is cited as a doubtful synonym. Munro has suggested that Bambusa excelsa

Miq. is a synonym of Gigantochloa verticillata Munro. The native names given by Rumphius are bulu sammet, bulu gantang, bulu wani besaar, terin maysele, and tabatiko sammat. I suspect that it is, at least in part, Dendrocalamus giganteus Munro.

GIGANTOCHLOA Kurz

GIGANTOCHLOA ASPERA (Schultes) Kurz ex Koord. Exkurs. Fl. Java 1 (1911) 176.

Bambusa aspera Schultes Syst. 7 2 (1830) 1352 (type!). Arundarbor aspera Rumph. Herb. Amb. 4: 11, t. 2.

Munro,* sub Gigantochloa atter Kurz, states: "Kurz, in his notes, identifies this species [Gigantochloa atter] with Bambusa aspera and B. bitung Roem. & Sch." to which Kurz † rejoins: "I do not understand this interpretation in which I am said to have identified 2 such species, as those alluded to, which differ toto coelo! As far as I am aware I have identified B. aspera with B. Bitung, but surely not these two with B. atter. The one is (sententia Munroana) a Dendrocalamus, the other a Gigantochloa." He then adds a diagnosis of Bambusa aspera as he understands the species, but which is not published under Gigantochloa. The range is given as "Indian Archipelago, from the Moluccas to Singapore." Bambusa aspera R. & S. is not mentioned by Gamble,‡ but Bambusa bitung R. & S. is placed as a probable synonym under Dendrocalamus flagellifer Munro. Camus § likewise does not mention Bambusa aspera R. & S., but follows Munro and Gamble in the disposition of Bambusa bitung R. & S. I have found no transfer of the species to Gigantochloa antedating that made by Koorders, cited above. The species, which is one of doubtful status, may be a Dendrocalamus.

DINOCHLOA Büse

DINOCHLOA sp.?

Boeloe rottang Rumph. Herb. Amb. 5: 119.

The description manifestly applies to some scandent species of bamboo, which might be either of the genus *Dinochloa* or *Schizostachyum*. Hasskarl, Neue Schlüssel (1866) 102, referred it with doubt to *Dinochloa tjankorreh* Büse=D. scandens O. Ktze., but in the absence of material from Amboina representing any scandent bamboo, all reductions of *Boeloe rottang* must be uncertain.

^{*} Trans. Linn. Soc. 26 (1870) 125.

[†] Journ. As. Soc. Beng. 39 2 (1870) 87.

[‡] Ann. Bot. Gard. Calcutta 7 (1896) 1-133, t. 1-118.

[§] Les Bambusées (1913) 1-215.

SCHIZOSTACHYUM Nees

SCHIZOSTACHYUM BRACHYCLADUM Kurz in Journ. As. Soc. Beng. 39² (1870) 89.

Arundarbor cratium Rumph. Herb. Amb. 4: 5.

Amboina, Batoe merah, Robinson Pl. Rumph. Amb. 36, August 11, 1913; Lateri, Robinson Pl. Rumph. Amb. 37, August 26, 1913, locally known as bulu jawa and bulu seru, in dense clumps, culms from 5 to 10 meters high, the internodes 35 to 90 cm in length.

In regard to the numbers cited, Mr. Gamble writes as follows: "I think that you have correctly identified these with Arundarbor cratium. The specimens are quite good ones of Schizostachyum brachycladum Kurz, and agree with a series of specimens from Java and the Philippines as well as with specimens from cultivated plants in the Calcutta garden." Loureiro, Fl. Cochinch. (1790) 58, referred Arundarbor cratium to Arundo fax Lour., a species based on Cochin-China specimens and probably not the same as the Amboina form. Melocanna humilis Roep., ex Trin Clav. Agrost, (1822) 105, is merely a new name for Arundo fax Lour. Beesha humilis Kunth, Enum. 1 (1833) 434, and Beesha fax R. & S., Syst. 7² (1830) 1336, are also synonyms of Arundo fax Lour, and like Loureiro's species are not to be interpreted by the latter's erroneous reduction of Arundarbor cratium Rumph. Rumphius briefly describes six forms following Arundarbor cratium, but the descriptions are not sufficiently definite to warrant the reduction of any of them. They may or may not be variants of Schizostachyum brachucladum Kurz. See also under Schizostachuum (Bambusa longinodis Miq.).

SCHIZOSTACHYUM sp.

Bambusa longinodis Miq. Fl. Ind. Bat. 3 (1855) 418 (type!). Arundarbor spiculorum Rumph. Herb. Amb. 4:7.

Miquel's species was based wholly on Rumphius, as he specifically includes from Bambusa tabacaria Poir. (Arundo tabacaria Lour.) only the reference to Rumphius. Loureiro, Fl. Cochinch. (1790) 68, quotes Rumphius's species as a synonym of Arundo tabacaria Lour., a species based on Cochin-China specimens undoubtedly different from the Amboina plant; Bambusa tabacaria Poir. is merely a new name for Loureiro's species and must be interpreted from Loureiro's description, not from Rumphius. Bambusa longinodis Miq. is unquestionably a species of Schizostachyum closely allied to the Philippine Schizostachyum lima (Blanco) Merr. (S. hallieri Gamble) and

to Schizostachyum brachycladum Kurz. It is barely possible that the Lateri specimen, cited above under Schizostachyum brachycladum Kurz (Pl. Rumph. Amb. 37) and described by Doctor Robinson as having internodes 60 to 90 cm in length, may be Arundarbor spiculorum Rumph. In Pl. Rumph. Amb. 36, also cited under Schizostachyum brachycladum Kurz, the internodes are from 35 to 40 cm in length, but the branches, leaves, inflorescence, and spikelets are identical in both specimens.

BAMBUSEAE OF UNCERTAIN STATUS

The following forms of bamboo described by Rumphius are undeterminable, and fortunately, with possibly one exception, they have not been made the basis of binomials by subsequent authors:

Arundarbor fera silvestris Rumph. Herb. Amb. 4: 16.

This is probably the same as Bambusa spinosa Roxb.

Arundarbor ferae adf. Rumph. Herb. Amb. 4: 18.

Arundarbor fera nigra Rumph. Herb. Amb. 4: 18.

This may be $Bambusa\ nigra\ Lodd.$, where it has been placed by several authors.

Arundarbor fera s. cha Rumph. Herb. Amb. 4: 18.

Arundarbor fera s. bulu tsjatjar Rumph. Herb. Amb. 4: 18.

Arundarbor fera s. Arundo japanica Rumph. Herb. Amb. 4: 18.

CYPERACEAE

KYLLINGA Rottboell

KYLLINGA MONOCEPHALA Rottb. Descr. et Ic. Pl. (1773) 13, t. 4, f. 4. Gramen capitatum Rumph. Herb. Amb. 6: 8, t. 3, f. 2.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 429, July 25, 1913, in meadows near sea level, associated with Kyllinga brevifolia Rottb. (Rel. Robins. 1897).

The figure presents a good habit sketch of what might be either Kyllinga monocephala Rottb. or K. brevifolia Rottb., but as the inflorescence is described as white, I have referred the Rumphian figure and description to Kyllinga monocephala; the inflorescence of K. brevifolia Rottb. is usually, if not always, green instead of white. Historically, the Rumphian figure was first considered by Linnaeus, in Stickman Herb. Amb. (1754) 25, Amoen. Acad. 4 (1759) 133, where it is erroneously reduced to Scirpus glomeratus Linn. Burman f., Fl. Ind. (1768) 18, and Loureiro, Fl. Cochinch. (1790) 41, erroneously refer it to Schoenus coloratus Linn. Lamark, however, Encycl. 3 (1789) 366, correctly reduced it to Kyllinga monocephala Rottb., this reduction being very generally accepted by subsequent authors.

REMIREA Aublet

REMIREA MARITIMA Aubl. Pl. Guin. (1775) 45, t. 16.

Cyperus longus Rumph. Herb. Amb. 6: 5, t. 2, f. 1.

AMBOINA, Hatiwe, Robinson Pl. Rumph. Amb. 436, September 4, 1913, growing on the strand.

The specimen agrees entirely with Rumphius's description and with the excellent figure given by him. The identity of *Cyperus longus* with *Remirea maritima* has not been previously suggested. By Kunth, Enum. 2 (1837) 94, it was erroneously reduced to *Cyperus kyllingioides* Vahl, following Roemer and Schultes, Mant. 2 (1824) 98, who, however, cite by error Rheede's Hortus Malabaricus, rather than Rumphius. This reduction is followed by Hasskarl, Neue Schlüssel (1866) 152.

PYCREUS Beauvois

PYCREUS ODORATUS (Linn.) Urb. Symb. Antil. 2 (1900) 164.

Cyperus odoratus Linn. Sp. Pl. (1753) 46, excl. syn. Sloane.

Pycreus polystachyus Beauv. Fl. Oware et Benin 2 (1807) 48, t. 86, f. 2.

Cyperus polystachyus R. Br. Prodr. (1810) 214.

Cyperus floridus II mas Rumph. Herb. Amb. 6: 2, t. 1, f. 2.

AMBOINA, near the town of Amboina, along sandy beaches, Robinson Pl. Rumph. Amb. 431, August 22, 1913.

Hasskarl, Neue Schlüssel (1866) 151, refers both figures 1 and 2 of table 1 to Cyperus rotundus Linn. Figure 1 is certainly correctly referred by him, but figure 2 and the description of Cyperus floridus mas appear to me to agree better with the common and widely distributed Pycreus odoratus Urb.

CYPERUS Linnaeus

CYPERUS ROTUNDUS Linn. Sp. Pl. (1753) 45.

Cyperus rotundus bulbosus sive legitimus Rumph. Herb. Amb. 6:1, $t.\ 1,\ f.\ 1.$

This common species is not represented in our Amboina collections, but there is not the slightest doubt as to the correctness of this reduction, which follows both Kunth and Hasskarl.

ELEOCHARIS R. Brown

ELEOCHARIS DULCIS (Burm. f.) Trin. ex Henschel Vita Rumph. (1833) 186.

Andropogon dulcis Burm. f. Fl. Ind. (1768) 219 (type!),

Hippuris indica Lour. Fl. Cochinch. (1790) 16.

Carex tuberosa Blanco Fl. Filip. (1837) 35.

Cyperus dulcis Rumph. Herb. Amb. 6: 7, t. 3, f. 1.

This species is not represented in our Amboina collections, but the Rumphian figure unmistakably represents a plant allied to Eleocharis tuberosa Schultes, which is possibly but a tuberbearing form of Eleocharis plantaginoidea (Rottb.) W. F. Wight (Scirpus plantaginoides Rottb., Eleocharis plantaginea R. Br., Scirpus plantagineus Retz.). Rumphius's Cyperus dulcis is in part the basis of Burman's Andropogon dulcis, this author also citing a figure in Plukenet. There is no indication that Burman had actual specimens, the Rumphian reference is the first one given, and the specific name is taken from Rumphius; therefore, I have interpreted Cyperus dulcis as the type. In Index Kewensis Andropogon dulcis Burm, f. is reduced to Sorghum vulgare. The Malayan form very closely approaches the one cultivated in southern China, known in Canton as maa tai, that is, typical Eleocharis tuberosa (Roxb.) Schultes. Loureiro's description of Hippuris indica apparently applies to the wild form of this species, as he describes the tubers as small and pilose; those of maa tai are smooth and from 2.5 to 4.5 cm in diameter. Loureiro quotes Cyperus dulcis Rumph. as a synonym of Hippuris indica Lour. It is to be noted that Eleocharis dulcis Trin. does not appear in Index Kewensis.

FIMBRISTYLIS Vahl

FIMBRISTYLIS SETACEA Benth. in Hook. Lond. Journ. Bot. 2 (1843) 239.

Gramen polytrichum Rumph. Herb. Amb. 6: 17, t. 7, f. 1.

AMBOINA, Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 438, August 12, 1913, along roadsides, altitude about 250 meters.

The figure given by Rumphius presents a good habit sketch that might with almost equal propriety be referred to Fimbristylis setacea Benth., to F. polytrichoides R. Br., to F. acuminata Vahl, or to any similar tufted species with slender leafless stems and solitary terminal spikelets. As Fimbristylis setacea Benth. is the only species of this type represented in the Amboina collection, I have interpreted it as Gramen polytrichum Rumph. Linnaeus, through error, reduced it to Eriocaulon setaceum Linn., Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 880, followed by Loureiro, Fl. Cochinch. (1790) 60. Willdenow, Sp. Pl. 1 (1797) 295, referred it to Scirpus polytrichoides Retz.=Fimbristylis polytrichoides R. Br., which disposition of it has been followed by various authors. There is nothing in the Rumphian description to indicate to which of the species of Fimbristylis discussed above it can be referred; from the

habitat cited by Rumphius, the indications are that *Fimbristylis* setacea Benth., rather than *F. polytrichoides* R. Br., is the correct disposition of it; it is certainly not *Fimbristylis acuminata* Vahl.

GAHNIA Forster

GAHNIA RAWACENSIS (Kunth) Steud. Syn. Pl. Cyp. (1855) 164?

Lamprocarya rawacensis Kunth Enum. 2 (1837) 333.

Carex culmaris Rumph. Herb. Amb. 6: 21?

Amboina, Amahoesoesoe, Robinson Pl. Rumph. Amb. 434, September 18, 1913, on hillsides, altitude about 150 meters.

The identity of the specimen with either Gahnia rawacensis Steud. or Carex culmaris Rumph. is very doubtful. The specimens somewhat resemble Gahnia tristis Nees, but are very much smaller and differ in various details. They do not, however, agree entirely with the rather imperfect description of Gahnia rawacensis Steud., the type of which was from Rawak Island, in the Moluccas; it has been reduced, apparently erroneously, to Gahnia aspera Spreng. Hasskarl, Neue Schlüssel (1866) 155, refers the Rumphian plant to Gahnia javanica Z. & M. Doctor Robinson, who suggested the identity of the plant with Carex culmaris, states: "Identification considered very doubtful, but so must any identification be."

HYPOLYTRUM Richard

HYPOLYTRUM LATIFOLIUM Rich. ex Pers. Syn. 1 (1805) 70.

Carex laevis minor Rumph. Herb. Amb. 6:21.

Amboina, Batoe gadjah, Robinson Pl. Rumph. Amb. 432, August 5, 1913, near streams, altitude about 150 meters.

This reduction of Carex laevis minor to Hypolytrum latifolium Rich. has not prevously been suggested. Rumphius's description applies closely to the species as here interpreted. Hasskarl, Neue Schlüssel (1866) 155, has suggested that it might be a form of Cyperus polystachyus Rottb.=Pycreus odoratus Urb., but that reduction is an impossible one.

SCIRPIODENDRON Zippel

SCIRPIODENDRON GHAERI (Gaertn.) Merr. in Philip. Journ. Sci. 9 (1914) Bot. 268.

Chionanthus ghaeri Gaertn. Fruct. 1 (1781) 190, t. 29, f. a-e; Boerl. in Journ. Linn. Soc. Bot. 31 (1896) 246.

Scirpiodendron costatum Kurz in Journ. As. Soc. Beng. 38² (1869) 85. Scirpiodendron pandaniforme Zipp. ex Kurz 1. c.

Scirpiodendron sulcatum Miq. Ill. Fl. Archipel. Ind. (1871) 65, t. 28.

Pandanus caricosus Spreng. Syst. 3 (1826) 897 (type!); Kunth Enum. 3 (1841) 98, non Pandanus caricosus Kurz in Journ. Bot. 5 (1867) 100, t. 62, f. 1-3, nec Warb. in Engl. Pflanzenreich 3 (1900) 83.

Pandanus caricosus Rumph. Herb. Amb. 4: 154.

Amboina, Paso, Robinson Pl. Rumph. Amb. 437, November 25, 1913, along margins of streams near the beach.

Pandanus caricosus Rumph. is unquestionably a Scirpiodendron, although the leaves, as described, are unusually long for S. ghaeri Merr. The description of the infructescence and fruit, however, is unquestionably Scirpiodendron: "Ejus fructus raro in conspectum venit, atque in peculiari progerminat petiolo, pedem circiter alto, & supra radicem elevato, qui foliis cingitur tribus, in triangulo positis, uti in Cypero." Pandanus caricosus Spreng. is based absolutely on the Rumphian description, and the species as described by him, after Rumphius, is repeated by various other authors. Kurz,* however, described a true Pandanus, under the name Pandanus caricosus, which was accepted by Warburg† as a valid species. As Kurz's name is invalidated by Pandanus caricosus Spreng., I propose the new specific designation Pandanus kurzii, for Pandanus caricosus Kurz, non Spreng.

MAPANIA Aublet

MAPANIA MACROCEPHALA (Gaudich.) K. Sch. ex Warb. in Engl. Bot. Jahrb. 13 (1891) 265.

Hypolytrum macrocephalum Gaudich. in Freyc. Voy. Bot. (1826) 414. Lepironia macrocephala Miq. Ill. Fl. Archipel. Ind. (1871) 64, t. 27. Carex laevis major Rumph. Herb. Amb. 6: 21.

Amboina, Batoe gadjah, Robinson Pl. Rumph. Amb. 430, August 5, 1913, along streams, altitude about 150 meters.

Hasskarl, Neue Schlüssel (1866) 155, has suggested that Carex laevis major of Rumphius is Pandanophyllum palustre Hassk., but Rumphius's description does not agree, especially in the statement as to the stalk of the inflorescence bearing two or three long leaves. It is, with very little doubt, Mapania macrocephala K. Sch.

SCLERIA Bergius

SCLERIA LITHOSPERMA Sw. Prodr. (1788) 18.

Carex amboinica II minor Rumph. Herb. Amb. 6: 20.

Amboina, Wakeroe, Robinson Pl. Rumph. Amb. 435, near the seashore, October 17, 1913.

^{*} Journ. Bot. 5 (1867) 100, t. 62, f. 1-3. † Engl. Pflanzenreich 3 (1900) 83.

The identity of Carex amboinica minor Rumph. with Scleria lithosperma Sw. is very probable. Hasskarl has suggested, Neue Schlüssel (1866) 155, that it is Scleria trialata Poir., a species originally described from Madagascar. The specimen from the Moluccas, determined by Brongniart, in Duperry's Voy. Bot. (1829) 165, and referred by Kunth with doubt to Scleria trialata Poir., is probably Scleria bancana Miq.

SCLERIA BANCANA Miq. Fl. Ind. Bat. Suppl. (1861) 602.

Carex amboinica I major Rumph. Herb. Amb. 6: 20, t. 8, f. 1?

AMBOINA, Gelala and Soja road, Robinson Pl. Rumph. Amb. 433, August, September, 1913, on barren, grassy hillsides.

The identification follows a suggestion made by Doctor Robinson, who considers this plant as probably representing the Rumphian species. It is to be noted, however, that Rumphius's figure and description of Carex amboinica major call for a plant with pseudoverticillate leaves, while in Scleria bancana Miq. the leaves are all alternate and distant. It is suspected that the plant Rumphius intended is Scleria sumatrensis Retz., S. scrobiculata Nees, or some very closely allied form, such as S. multifoliata Boeckl. Historically the first reference to Rumphius is that by Linnaeus, in Stickman Herb. Amb. (1754) 25, where under t. 8 he includes, by error, with Carex amboinica, Lithospermum amboinicum and Arundinella: for the latter two t. 9 was intended, and the same error is repeated in Amoen. Acad. 4 (1759) 134. Burman f., Fl. Ind. (1768) 19, based his Schoenus paniculatus partly on Carex amboinica Rumph., but the type was a specimen from Java, and the species must be interpreted from the Javan specimen. It is supposed to include both Scleria sumatrensis Retz. and S. alata Thw. The Rumphian figure and description have been referred by other authors to Scleria flagellum Sw., S. tessellata Brongn., and S. approximata Hassk.

CYPERACEAE OF UNCERTAIN STATUS

Cyperus rotundus Rumph. Herb. Amb. 6: 4 quoad humilior, altior, gramen bufonum, et III inodorus.

The descriptions of these four forms manifestly pertain to the *Cyperaceae*, but the data given are too vague to warrant the definite reduction of them to any particular genus or species. For the most part, apparently, species of *Cyperus* and *Fimbristylis* are intended.

Carex amboinica III Rumph. Herb. Amb. 6: 20.

A coarse sedge from Bali, there known as tallan tallan; probably one of the large species of Cyperus. Hasskarl, Neue Schlüssel (1866) 155, thought that it might be Rhynchospora aurea Vahl=R. corymbosa (Linn.) Britt.

PALMAE

The Amboina collections made by Doctor Robinson have thrown comparatively little light on the identity of the numerous species of palms described by Rumphius, for the reason that very few palms were secured by him. Probably in no other group of plants is there more confusion among those species based by later authors on Rumphius or more species of uncertain status than in this family. In the genus Calamus numerous species that were based wholly on the Rumphian descriptions and figures are quite unrecognizable; their positions within the genus and their relationships with other forms are quite undeterminable. In the genus Metroxylon it is impossible to determine, from material at present available, whether one somewhat polymorphous species or several closely allied ones are represented. In order definitely to settle many cases of uncertain nomenclature and to determine the true characters of many species that have been based wholly on Rumphius, a much more extensive botanical exploration of the Moluccas, especially of Amboina, is necessary, and in no group of plants is this more important than in the Palmae.

Beccari has recently given us critical and beautifully illustrated monographs of the genera *Calamus* and *Daemonorops*,* yet of the fifteen species belonging in these two genera, described and for the most part figured by Rumphius, he was able definitely to recognize and to connect with botanical material but four species. Four, incidentally mentioned in the text, he justly states can in all probability never be recognized, but the others he considers to represent characteristic species, which will eventually be recognized when the Moluccas shall have been more thoroughly explored botanically.

Numerous questions of nomenclature cannot be determined from data at present available, and accordingly the following treatment of the palms described by Rumphius is distinctly unsatisfactory in many respects. Many of the more characteristic forms figured by him are readily recognizable, and their status is certain. Others must await the collection of additional material. Under the circumstances it has been considered best to give a critical enumeration of all the species, according to their definitely determined or their problematical positions. In certain cases new names are indicated, but few new combina-

^{*} Ann. Bot. Gard. Calcutta 11 (1908) 1-518, t. 1-238; 12 1 (1911) 1-237, t. 1-109.

tions have been proposed in view of the uncertain status of some of the species.

I am under obligations to Doctor O. Beccari, Florence, Italy, for identifications of the palms actually collected by Doctor Robinson.

CORYPHA Linnaeus

CORYPHA UTAN Lam. Encycl. 2 (1786) 131 (type!).

Borassus sylvestris Giseke Prael. Ord. Nat. Pl. (1792) 86 (type!).

Taliera sylvestris Blume ex Schultes Syst. 7 (1830) 1307 (type!).

Corypha sylvestris Mart. Hist. Nat. Palm. 3 (1838) 233; Blume
Rumphia 2 (1836) 59 (type!).

Lontarus silvestris Rumph. Herb. Amb. 1:53, t. 11.

Lontarus silvestris Rumph. is the whole basis of Corypha utan Lam., which name should be maintained if the species proves to be a valid one. Borassus sylvestris Giseke, Corypha sylvestris Mart., and Taliera sylvestris Blume are exact synonyms, being, like Corypha utan Lam., based on Rumphius.

CORYPHA GEBANGA Blume Rumphia 2 (1836) 59, t. 97, 89, 105; Mart. Hist. Nat. Palm. 3 (1838) 233.

Gembanga rotundifolia Blume ex Nees in Flora 8 (1825) 580, 676. Taliera gembanga Blume ex Schultes Syst. 7 (1830) 1307. Lontarus silvestris s. cabang Rumph. Herb. Amb. 1:55.

In this reduction I have followed Blume and Martius. In view of the uncertain status of Blume's species, no attempt is made to adjust the synonymy. It is manifestly very closely allied to, if not identical with, *Corypha elata* Roxb., and it may also prove to be the same as *Corypha utan* Lam.

CORYPHA ELATA Roxb. Hort. Beng. (1814) 25, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 176.

Lontarus silvestris s. yhur e Philippin. Rumph. Herb. Amb. 1:54.

Among all the palms that occur in the Philippines that yield a sago-like edible fecula, Rumphius's discussion of this applies only to *Corypha* in "trunco tam crasso, ut vir eum brachiis complecti nequeat." *Corypha elata* Roxb. may prove to be identical with one or both of the preceding species. Hasskarl, Neue Schlüssel (1866) 12, quotes it as a possible synonym of *Borassus sylvestris* Gieseke, after Henschel, Vita Rumph. (1833) 140.

LICUALA Thunberg

LICUALA RUMPHII Blume Rumphia 2 (1836) 41, t. 89, f. 2.

Corypha licuala Lam. Encycl. 2 (1783) 131 (type!).

Licuala arbor Rumph. Herb. Amb. 1: 44, t. 9.

The status of this species, as distinct from Licuala spinosa

Wurmb, in Verh. Bat. Genoets. 2 (1780) 469, is doubtful, and it may properly be a synonym of Wurmb's species. Loureiro, Fl. Cochinch. (1790) 213, placed it under Corypha pilearia Lour., which is Licuala pilearia Blume, and perhaps the same as Licuala spinosa Wurmb. It is the whole basis of Corypha licuala Lam. and in part the basis of Licuala rumphii Blume. Murray, Giseke, Roxburgh, Willdenow, Poiret, Schultes, and other authors refer it to Licuala spinosa Thunb., in Vet. Akad. Nya Handl. (1782) 278, which is antedated by two years by Licuala spinosa Wurmb. The essential distinctive characters of Licuala rumphii Blume are very imperfectly known, and a critical revision of the genus may show that it is a synonym of Licuala spinosa Wurmb. The figure is poor, but it manifestly represents a Licuala very similar in appearance to the widely distributed Licuala spinosa Wurmb.

LIVISTONA R. Brown

LIVISTONA ROTUNDIFOLIA (Lam.) Mart. Hist. Nat. Palm. 3 (1838) 241.

Corypha rotundifolia Lam. Encycl. 2 (1786) 131 (type!). Saribus rotundifolius Blume Rumphia 2 (1836) 49. Licuala rotundifolia Blume ex Roem. & Schultes Syst. 7 ² (1830) 1305. Saribus Rumph. Herb. Amb. 1: 42, t. 8.

This is one of the few Rumphian species considered by Linnaeus in the first edition of his Species Plantarum (1753), where he erroneously reduced it to Corypha umbraculifera Linn., page 1187, and later cited it under the same name in Stickman Herb. Amb. (1754) 6, Amoen. Acad. 4 (1759) 118, and Sp. Pl. ed. 2, (1763) 1657, in which he was followed by Giseke, Prael. Ord. Nat. Pl. (1792) 49. Louriero, Fl. Cochinch. (1790) 212, placed it under Corypha saribus Lour., taking his specific name from Rumphius. The species he actually described, however, is not the Amboina form, but is Livistona cochinchinensis Blume. Saribus Rumph. is the whole basis of Corypha rotundifolia Lam., which in turn typifies Livistona rotundifolia Mart.

Arbor tsjang Rumph., Herb. Amb. 1: 63, which is very imperfectly described, is perhaps a species of *Livistona*, as suggested by Hasskarl, Neue Schlüssel (1866) 12; it was from French Indo-China.

LIVISTONA? BISSULA Mart. Hist. Nat. Palm. 3 (1838) 242 (type!).

Licuala? bissula Miq. Fl. Ind. Bat. 3 (1855) 57 (type!).

Bissula Rumph. Herb. Amb. 1: 85.

The status of this species is entirely doubtful. It may be

neither a Livistona nor a Licuala; the description of the fruits is suggestive of *Pholidocarpus*. Rumphius's specimens were from Celebes, where the palm is known as bissula and metsje.

PHOLIDOCARPUS Blume

PHOLIDOCARPUS IHUR (Giseke) Blume Rumphia 3 (1837) 90 (type!).

Borassus ? ihur Giseke Prael. Ord. Nat. Pl. (1792) 87 (type!).

Pholidocarpus rumphii Meisn. ex Hassk. in Abhandl. Naturf. Gesellsch. Halle 9 (1866) 154 (type!).

Lontarus silvestris altera s. ihur Rumph. Herb. Amb. 1: 56, t. 12.

The Rumphian illustration and description typify *Borassus ihur* Giseke, *Pholidocarpus ihur* Blume, and *Pholidocarpus rumphii* Meisn.; the last does not appear in Index Kewensis.

BORASSUS Linnaeus

BORASSUS FLABELLIFER Linn. Sp. Pl. (1753) 1187.

Borassus flabelliformis Murr. Syst. (1774) 827. Lontarus domestica Gaertn. Fruct. 1 (1788) 21, t. 8.

Lontarus domestica Rumph. Herb. Amb. 1:45, t. 10.

This was one of the few Rumphian species considered by Linnaeus in the first edition of his Species Plantarum (1753), where, page 1187, he correctly reduced it to *Borassus flabellifer* Linn., the reduction being repeated in his later writings, Stickman Herb. Amb. (1754) 6, Amoen. Acad. 4 (1759) 118, Sp. Pl. ed. 2 (1763) 1657, and generally accepted by all authors. Gaertner, Fruct. 1 (1788) 21, merely substituted the generic name *Lontarus* for the Linnaen name *Borassus*, considering the species under the new name *Lontarus domestica* Gaertn.

LODOICEA Commerson

LODOICEA MALDIVICA (Gmel.) Pers. Syn. 2 (1807) 630.

Cocos maldivica Gmel. Syst. (1791) 569 (maldioica), ed. 2 (1796) 569.

Borassus sonnerati Giseke Prael. Ord. Nat. Pl. (1792) 86.

Lodoicea callipyge Comm. ex St. Hil. Expos. 1 (1805) 96.

Lodoicea seychellarum Labill. in Ann. Mus. Paris 9 (1807) 140, t. 13.

Cocus maldivicus Rumph. Herb. Amb. 6: 210, t. 81.

Rumphius figures only the fruit of this striking palm, and Gmelin's specific name, here adopted, is the oldest valid one for the species.

METROXYLON Rottboell

METROXYLON SAGU Rottb. in Nye Samml. Dansk. Vidensk. Selsk. Skrift. 2 (1783) 527.

Sagus genuina Giseke Prael. Ord. Nat. Pl. (1792) 94 (type!). Metroxylon sagus Koenig in Spreng. Syst. 2 (1825) 138 (type!).

Sagus rumphii Willd. Sp. Pl. 4 (1805) 404 (type!).

Metroxylon rumphii Mart. Hist. Nat. Palm. 3 (1838) 213.

Sagus inermis Roxb. Hort. Beng. (1814) 68 (type!).

Sagus genuina Rumph. Herb. Amb. 1: 72, t. 17, 18.

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 26, October 28, 1913, locally known as sagu tuni. The inflorescence and fruit from a felled trunk, the leaves from a neighboring palm. Doctor Beccari, who has examined the material, thinks that perhaps the fruits belong with Metroxylon micracanthum Mart.

The sago palm presents considerable variation, especially in the presence or absence of spines, and when spines are present, in their length. It is probable that altogether too many "species" have been proposed and that most of the plants described by Rumphius, on which later authors have based various binomials, are really but forms or varieties of a single species. No material is available, however, for purposes of comparison, and accordingly the various species that have been based on Rumphius's descriptions are listed below with their proper synonyms. The Rumphian illustrations and descriptions, cited above, have been quoted under all of the synonyms above listed, and most of them have been based solely on Rumphius. I have here adopted what is manifestly the oldest specific name for the species.

METROXYLON MICRACANTHUM Mart. Hist. Nat. Palm. 3 (1838) 215 (type!).

Sagus micracanthus Blume Rumphia 2 (1836) 153 (type!). Sagus genuina II Rumph. Herb. Amb. 1:75.

This is probably merely a form of *Metroxylon sagu* Rottb., and it is possible that the fruit and spadices of the specimen cited under the above species belong here.

METROXYLON LONGISPINUM Mart. Hist. Nat. Palm. 3 (1838) 215 (type!).

Sagus longispina Blume Rumphia 2 (1836) 154 (type!). Sagus genuina Giseke var. longispina Giseke Prael. Ord. Nat. Pl. (1792) 94 (type!).

Sagus longispina Rumph. Herb. Amb. 1: 75.

This is apparently merely a form or variety of the common sago palm with long spines. However, no material is available to warrant its definite reduction. The native names cited by Rumphius are lapia macanaru, lapia macanalo, and lapia macanalun. It was reduced by Poiret, in Lam. Encycl. 6 (1804) 394, to Sagus farinifera (Gaertn.) Lam., which is certainly not the correct disposition of it.

METROXYLON INERME Mart. Hist. Nat. Palm. 3 (1838) 215.

Sagus laevis Blume Rumphia 2 (1836) 147. Sagus laevis Rumph. Herb. Amb. 1: 76.

Like the preceding this is probably only a form or variety of the common sago palm. It has been referred by various authors to *Metroxylon laeve* Mart., to *Sagus spinosus* Roxb., to *Metroxylon hermaphroditum* Hassk., and to *Metroxylon sagus* Rottb., besides the synonyms cited above. Native names cited by Rumphius are *lapia molat*, *sagu parampuan*, and *bulun*.

METROXYLON SYLVESTRE Mart. Hist. Nat. Palm. 3 (1838) 215 (type!).

Sagus genuina Giseke var. silvestris Giseke Prael. Ord. Nat. Pl. (1792) 94 (type!).

Sagus silvestris Rumph. Herb. Amb. 1: 75.

Amboina, Paso, Robinson Pl. Rumph. Amb. 27, October 29, 1913, locally known as sagu ihur.

The specimen has fairly long spines on its petioles, undoubtedly represents Sagus silvestris Rumph., and hence Metroxylon sylvestre Mart., but in all essential characters it appears to be identical with Metroxylon sagu Rottb.

PIGAFETTIA Beccari

PIGAFETTIA FILIFERA (Giseke) comb. nov.

Sagus filifera Giseke Prael. Ord. Nat. Pl. (1792) 94 (type!). Sagus filaris Blume Rumphia 2 (1836) 154 (type!). Metroxylon filare Mart. Hist. Nat. Palm. 3 (1838) 215 (type!). Pigafettia filaris Becc. Malesia 1 (1877) 90, in obs. Sagus filaris Rumph. Herb. Amb. 1: 84, t. 19.

The species is still known only from the Rumphian description and figure, which are the type of *Pigafettia filifera* and of all the synonyms cited above.

PIGAFETTIA ELATA (Reinw.) H. Wendl. in Kerch. Palm. (1878) 253.

Sagus elata Reinw. ex Blume Rumphia 2 (1836) 156, t. 128, f. 1.

Metroxylon elatum Mart. Hist. Nat. Palm. 3 (1838) 216.

Wanga Rumph. Herb. Amb. 1: 85.

Wanga, a Celebesian palm, is very briefly described by Rumphius. *Pigafettia elata* H. Wendl. seems to be the correct disposition of it.

ZALACCA Reinwardt

ZALACCA EDULIS Reinw. ex Roem. & Schultes Syst. 7 ² (1830) 1334.

Salacca edulis Reinw. Syll. Ratisb. 2 (1828) 3.

Salakka edulis Reinw. ex Blume Cat. Gew. Buitenz. (1823) 112.

Calamus zalacca Gaertn. Fruct. 2 (1791) 267, t. 139.

Zalacca blumeana Mart. Hist. Nat. Palm. 3 (1836-50) 201, t. 123, t. 159, f. 3.

Zalacca Rumph. Herb. Amb. 5: 113, t. 57. f. 2.

AMBOINA, Koesoekoesoe sereh and Mahija, Robinson Pl. Rumph. Amb. 25, August 23, 1913, locally known as salak.

Linnaeus, Sp. Pl. ed. 2 (1762) 463, originally reduced this through error to Calamus rotang Linn. Gaertner, Fruct. 2 (1791) 267, cites it under Calamus zalacca Gaertn.=Zalacca edulis Reinw. Most authors have cited it under Zalacca (Salacca) edulis Reinw., but Martius placed it under Zalacca blumeana Mart., which is merely a synonym of Reinwardt's species.

CALAMUS Linnaeus

CALAMUS ALBUS Pers. Syn. 1 (1805) 383 (pp. excl. syn. Lour.) (type!);

Beccari in Ann. Bot. Gard. Calcutta 11 (1908) 444, t. 199.

Palmijuncus albus Rumph. Herb. Amb. 5: 102, t. 53.

AMBOINA, Hitoe messen, Robinson Pl. Rumph. Amb. 24, October 14, 1913, in forests, altitude 200 meters; locally known as rotang tuni.

The specimen cited above has been identified with Calamus albus Pers. by Doctor Beccari. Palmijuncus albus Rumph. has been reduced by various authors to Calamus rotang Linn. and to Calamus rudentum Lour., most of the references in literature being to the latter species. Loureiro made the reduction to Calamus rudentum Lour. in the original description of that species, but the type was a Cochin-China specimen, and the species is certainly not the same as the Amboina one. Strictly following rules of nomenclature, the name Calamus albus Pers. belongs with Calamus rudentum Lour., as a synonym, but I have here followed Beccari in applying it to the Amboina plant.

CALAMUS GRAMINOSUS Blume Rumphia 3 (1837) 31 (type!).

Palmijuncus albus graminosus Rumph. Herb. Amb. 5: 104.

A species known only from Rumphius's description; see Beccari in Ann. Bot. Gard. Calcutta 11 (1908) 499. It has been reduced by various authors to *Calamus rotang* Linn., *C. rudentun* Lour., and *C. adspersus* Blume, but is manifestly none of these. It may be a form of *Calamus albus* Pers.

CALAMUS RUMPHII Blume Rumphia 3 (1837) 38 (type!).

Daemonorops rumphii Mart. Hist. Nat. Palm. 3 (1850) 331. Palmijuncus verus angustifolius Rumph. Herb. Amb. 5: 105, t. 54, f. 2.

A species known only from Rumphius's figure and description; see Beccari, in Ann. Bot. Gard. Calcutta 11 (1908) 400, who considers it to be allied to *Calamus palustris* Griff. It has been erroneously reduced by various authors to *Calamus rotang* Linn.,

to C. platyacanthos Mart., to Daemonorops elongatus Blume, and to D. longipes Griff.

CALAMUS PISICARPUS Blume Rumphia 3 (1837) 31 (type!).

Palmijuncus verus latifolius Rumph. Herb. Amb. 5: 106, t. 54, f. 1.

This species is known only from Rumphius's figure and description, but is considered by Beccari, Ann. Bot. Gard. Calcutta 11 (1908) 460, to represent a very distinct species allied to Calamus aruensis Becc. and C. holrungii Becc. By various authors it has been erroneously reduced to Calamus rotang Linn., to C. verus Lour., to C. oblongus Reinw., and to C. strictus Blume. Manifestly Calamus verus Lour., described from Cochin-China specimens, is a species entirely different from the Amboina plant, although Loureiro cites Palmijuncus verus Rumph. as a synonym of his species and takes his specific name from Rumphius.

CALAMUS VIMINALIS Willd. Sp. Pl. 2 (1799) 203 (type!).

Calamus litoralis Blume Rumphia 3 (1837) 43.

Palmijuncus viminalis Rumph. Herb. Amb. 5: 108, t. 55, f. 2.

I agree with Beccari, Ann. Bot. Gard. Calcutta 11 (1908) 203, 497, that the Rumphian illustration pertains to the Javan species, not to the form described from Buru (*Calamus buroensis* Mart.). *Palmijuncus viminalis* Rumph. typifies *Calamus viminalis* Willd., and it has been erroneously reduced by various authors to *Calamus rotang* Linn., to *C. fasciculatus* Roxb., and to *C. buroensis* Mart.

CALAMUS BUROENSIS Mart. Hist. Nat. Palm. 3 (1850) 336 (type!).

Calamus viminalis e Burone Rumph. Herb. Amb. 5: 109 (non t. 55, f. 2).

This is a species of doubtful status, known only from Rumphius's description; see Beccari in Ann. Bot. Gard. Calcutta 11 (1908) 497.

CALAMUS EQUESTRIS Willd. Sp. Pl. 2 (1799) 204 (type!).

Palmijuncus equestris Rumph. Herb. Amb. 5: 110, t. 56.

A species known only from Rumphius's figure and description; see Beccari in Ann. Bot. Gard. Calcutta 11 (1908) 358. It has been erroneously reduced by various authors to *Calamus rotang*

Linn. and to *C. dioicus* Lour. Willdenow also refers here t. 57, f. 1, which Beccari places under *Calamus cawa* Blume.

CALAMUS CAWA Blume Rumphia 3 (1837) 31, 62 (type!).

Palmijuncus equestris s. rottang cawa Rumph. Herb. Amb. 5: 112, $t.\ 57,\ f.\ 1.$

A species known only from Rumphius's description; see Bec-

cari in Ann. Bot. Gard. Calcutta 11 (1908) 357. It has been confused by various authors with *Calamus equestris* Willd., with *C. javensis* Blume, and with *C. maritimus* Blume.

CALAMUS ACIDUS Becc. in Ann. Bot. Gard. Calcutta 11 (1908) 496 (type!).

Palmijuncus acidus Rumph. Herb. Amb. 6: 119, t. 58, f. 2, E.

A very imperfectly known species, known only from Rumphius's description and figure. By various authors it has been erroneously reduced to *Calamus barbatus* Blume; to *Calamus oblongus* "Linn.," which does not exist [Hasskarl, Neue Schlüssel (1866) 102]; and to *Daemonorops barbatus* Mart.

CALAMUS sp.

Palmijuncus aracanicus Rumph. Herb. Amb. 5: 107.

A form of entirely uncertain status; it was thought by Schultes to be referable to *Calamus oblongus* Reinw., and by Kunth to be *Calamus latifolius* Roxb.

CALAMUS sp.?

Palmijuncus viminalis s. ua huay Rumph. Herb. Amb. 5: 109.

Entirely indeterminable from any data given by Rumphius; it may not be a *Calamus* at all.

DAEMONOROPS Blume

DAEMONOROPS CALAPPARIUS Blume Rumphia 3 (1837) 7 (type!).

Calamus calapparius Mart. Hist. Nat. Palm. 3 (1850) 331. Calamus amboinensis Miq. in Verh. Kon. Akad. Wetensch. 11 (1868) 20.

Palmijuncus calapparius Rumph. Herb. Amb. 5:98, t. 51.

AMBOINA, Lateri, Robinson Pl. Rumph. Amb. 23, September 5, 1913, in forests, altitude about 250 meters, locally known as rotang bulu rusa.

The identification of this specimen with both *Palmijuncus calapparius* Rumph. and *Daemonorops calapparius* Blume has been made by Doctor Beccari, who has given a detailed description of the species from Amboina specimens.* Linnaeus originally reduced this to *Calamus rotang* Linn., Sp. Pl. ed. 2 (1762) 463, in which he was followed by numerous authors. Loureiro, Fl. Cochinch. (1790) 209, reduced it to *Calamus petraeus* Lour., but the Cochin-China species actually described by Loureiro is entirely different from the Amboina plant, and Beccari thinks it probably a species of *Korthalsia* or *Plectocomia*.

^{*} Ann. Jard. Bot. Calcutta 12 1 (1911) 164.

DAEMONOROPS NIGER (Willd.) Blume Rumphia 3 (1827) 5 (type!).

Calamus niger Willd. Sp. Pl. 2 (1799) 203 (type!).

Palmijuncus niger Rumph. Herb. Amb. 5: 101, t. 52.

A species known only from the Rumphian figure and description; see Beccari in Ann. Bot. Gard. Calcutta 12¹ (1911) 104. Palmijuncus niger Rumph. has been reduced by various authors to Calamus rotang Linn., to Calamus rudentum Lour., and to Daemonorops melanochaetes Blume, but these reductions are manifestly erroneous.

DAEMONOROPS PALEMBANICUS Blume Rumphia 3 (1837) 20.
Palmijuncus palimbanicus Rumph. Herb. Amb. 5: 107.

The reduction follows Blume, which is probably the correct disposition of Rumphius's species.

DAEMONOROPS DRACO (Willd.) Blume Rumphia 3 (1837) 8.

Calamus draco Willd. Sp. Pl. 2 (1799) 203 (type!).

Palmijuncus draco Rumph. Herb. Amb. 5: 114, t. 58, f. A, B.

Regarding this species, Beccari, Ann. Bot. Gard. Calcutta 12¹ (1911) 106, states: "Only the *Palmijuncus Draco* growing at Palembang, described and figured by Rumphius (l. c.) can be considered as the true *D. Draco*," and again: "The canes described by Rumphius * * * figured in plate 58 f. D * * * and which is there attributed to *Palmijuncus Draco*, are almost certainly those of *Calamus Scipionum*."

DAEMONOROPS RUBER Blume Rumphia 3 (1837) 6.

Daemonorops accedens Blume l. c. 13.

Palmijuncus draco e Bantam Rumph. Herb. Amb. 5: 116.

The Javan material included by Rumphius in his description of *Palmijuncus draco* was referred by Blume to *Daemonorops accedens* Blume, which is a synonym of *D. ruber* Blume; see Beccari in Ann. Bot. Gard. Calcutta 12¹ (1911) 114.

CARYOTA Linnaeus

CARYOTA RUMPHIANA Mart. Hist. Nat. Palm. 3 (1839) 195 (type!). Saguaster major Rumph. Herb. Amb. 1: 64, t. 14.

The illustration is an excellent habit sketch of this sufficiently well-known palm, which extends from the Philippines to the Moluccas and Java. Saguaster major Rumph. is the whole basis of Caryota rumphiana Mart., from which Caryota maxima Blume does not appear to be distinct. Linnaeus originally reduced the Rumphian species to the Indian Caryota urens Linn., in Stickman Herb. Amb. (1754) 6, Amoen. Acad. 4 (1759) 118, and

it is very generally cited as a synonym of the Linnean species in the early botanical literature. The species is, however, entirely distinct from Caryota urens Linn.

ARENGA * LaBillardière

ARENGA PINNATA (Wurmb) comb. nov.

Saguerus pinnatus Wurmb in Verh. Bat. Genoots. 1 (1779) 351. Borassus gomutus Lour. Fl. Cochinch. (1790) 618. Arenga saccharifera Labill. in Mém. Inst. Paris 4 (1801) 209. Gomutus rumphii Corr. in Ann. Mus. Paris 9 (1807) 288. Saguerus rumphii Roxb. Hort. Beng. (1814) 68 (type!). Saguerus saccharifer Blume Rumphia 2 (1836) 128. Gomutus saccharifer Spreng. Syst. 2 (1825) 624. Arenga gamuto Merr. in Philip. Journ. Sci. 9 (1914) Bot. 63. Palma indica vinaria II Rumph. Herb. Amb. 1:57, t. 13.

The common and well-known sugar palm is not represented in our Amboina collections. The figure and the description given by Rumphius unmistakably represent the form commonly known as Arenga saccharifera Labill. The illustration has been cited under Borassus gomutus Lour., Saguerus rumphii Roxb., Saguerus saccharifer Blume, and Arenga saccharifera Labill., all synonyms of Arenga pinnata (Wurmb) Merr.; while Giseke, Prael. Ord. Nat. Pl. (1792) 90, erroneously reduced it to Chamaerops humilis Linn. Wurmb's specific name is the oldest valid one for the species. Arenga gamuto Merr. was adopted on the assumption that "Saguerus gamuto Houtt." was published as indicated in Index Kewensis and in the synonymy of Arenga saccharifera Labill. as given by some authors; no such name appears in Houttuyn's work.

CALYPTROCALYX Blume

CALYPTROCALYX SPICATUS (Lam.) Blume Rumphia 2 (1836) 103, t. 102, f. 2, 118, 161.

Areca spicata Lam. Encycl. 1 (1783) 241 (type!).

Pinanga silvestris globosa Rumph. Herb. Amb. 1:38, t. 5, f. 1, A.

This species is not represented in our Amboina collections, but it has been minutely described and figured by Blume from Amboina specimens. The Rumphian description and crude figure are the whole basis of Areca spicata Lam. Gaertner, Fruct. 1 (1788) 24, referred it to Euterpe globosa Gaertn., in which he was followed by Giseke, Prael. Ord. Nat. Pl. (1792) 92, but the fruit figured by Gaertner is not that of Calyptrocalyx spicatus Blume. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866)

^{*} Retained name, Vienna Code; Saguerus Adans. (1763) is older.

10, thought that it was a species of Iguanura, while by other authors it has been placed as an undetermined species of Areca and of Pinanga.

DRYMOPHLOEUS Zippel

DRYMOPHLOEUS OLIVAEFORMIS (Giseke) Mart. Hist. Nat. Palm. 3 (1849) 314.

Areca olivaeformis Giseke Prael. Ord. Nat. Pl. (1792) 79 (type!).

Harina rumphii Mart. Hist. Nat. Palm. 189, ex Kunth. Enum. 3 (1841) 194.

Seaforthia olivaeformis Mart. Hist. Nat. Palm. 3 (1849) 314.

Ptychosperma rumphii Blume Rumphia 2 (1836) 119.

Saguaster minor Rumph. Herb. Amb. 1: 67, t. 15.

AMBOINA, Lateri and Gelala, Robinson Pl. Rumph. Amb. 21, 22, August and September, 1913, in ravines and in forests, altitude 20 to 200 meters, locally known as pinang utan.

Saguaster minor Rumph. is the basis of Areca olivaeformis Giseke, this supplying the oldest valid specific name. Hamilton, Mem. Wern. Soc. 5 (1826) 316, discusses it under Harina caryotoides Ham., which is described from Indian specimens, but he does not reduce Saguaster minor to this species.

DRYMOPHLOEUS APPENDICULATUS Becc. Malesia 1 (1877) 46.

Areca gracilis Giseke Prael. Ord. Nat. Pl. (1792) 80 (type!).

Ptychosperma appendiculata Blume Rumphia 2 (1836) 122, t. 84, 119.

Seaforthia jaculatoria Mart. Hist. Nat. Palm. 3 (1849) 314 (type!).

Drymophloeus jaculatorius Mart. Hist. Nat. Palm. 3 (1849) 314 (type!).

Sargile Rumph. Herb. Amb. 1: 68.

Areca gracilis Giseke was based wholly on Rumphius's description of Sargile. Beccari, Malesia 1 (1877) 46, has excluded it from the synonymy of Drymophloeus appendiculatus (Blume) Becc., with all other synonyms based on Rumphius, because of the fact that Rumphius included in the description more than one species, and because he based his description largely on data supplied to him by the natives. Beccari, op. cit. 98, refers "Saguaster minor ex Gilolo et Nova-Guinea," i. e., Sargile Rumph. p. p., to Drymophloeus jaculatorius Mart., a species of doubtful status.

DRYMOPHLOEUS sp.

Areca vaginata Giseke Prael. Ord. Nat. Pl. (1792) 80 (type!). Sargile minor II Rumph. Herb. Amb. 1: 68.

The form described in the last paragraph of chapter fifteen was made the type of *Areca vaginata* by Giseke. It may prove to be a synonym of the preceding species, but its status is now entirely doubtful.

DRYMOPHLOEUS ? sp.

Areca humilis Willd. Sp. Pl. 4 (1805) 595 (type!).

Seaforthia saxatilis Blume ex Mart. Hist. Nat. Palm. 3 (1838) 186 (type!).

Ptychosperma saxatilis Blume Rumphia 2 (1836) 121 (type!).

Pinanga silvestris saxatilis Rumph. Herb. Amb. 1: 42, t. 7.

This species is not represented in our Amboina collections; and, although it has been placed in several different genera, its proper place is still uncertain. Loureiro, Fl. Cochinch. (1790) 619, discusses it under Borassus caudata Lour., but does not definitely refer it to this species. The Rumphian figure and description are the whole basis of Areca humilis Willd., which thus supplies the oldest specific name for the species when once its proper genus is determined. It is also the whole basis of Ptychosperma saxatilis Blume and of Seaforthia saxatilis Blume. "Areca saxatilis Burm.," Fl. Ind. (1768) 42, quoted by Miquel and listed in Index Kewensis, does not appear in Burman's work. Beccari, Malesia 1 (1877) 47, excludes this from Drymophloeus, but make no suggestion as to its proper disposition.

ACTINORHYTIS H. Wendland and Drude

ACTINORHYTIS CALAPPARIA (Blume) H. Wendl. & Drude in Linnaea 39 (1875) 184.

Areca calapparia Blume Rumphia 2 (1836) 70, t. 100, f. 2. Seaforthia calapparia Mart. Hist. Nat. Palm. 3 (1849) 313. Ptychosperma? calapparia Miq. Fl. Ind. Bat. 3 (1855) 20. Pinanga calapparia Rumph. Herb. Amb. 1: 28.

This species is not represented in our Amboina collections. The reduction made by Blume and followed by Miquel and by Martius is apparently the correct disposition of *Pinanga calapparia* Rumph.

MISCHOPHLOEUS Scheffer

MISCHOPHLOEUS VESTIARIA (Giseke) comb. nov.

Areca vestiaria Giseke Prael. Ord. Nat. Pl. (1792) 78 (type!).

Seaforthia vestiaria Mart. Hist. Nat. Palm. 3 (1849) 313 (type!).

Ptychosperma vestiaria Miq. Fl. Ind. Bat. 3 (1855) 31 (type!).

Ptychosperma paniculata Miq. in Verh. Kon. Akad. Wetensch. 11 (1868) 3.

Areca paniculata Scheff. in Naturk. Tijdschr. Ned. Ind. 32 (1873) 168.

Mischophloeus paniculata Scheff. in Ann. Jard. Bot. Buitenz. 1 (1876) 152.

Pinanga silvestris e Buro Rumph. Herb. Amb. 1: 41.

I have here adopted what is apparently the oldest specific name for this species, as *Areca vestiaria* Giseke was based wholly

on Rumphius's description, as were *Seaforthia vestiaria* Mart. and *Ptychosperma vestiaria* Miq. There seems to be no doubt that *Mischophloeus paniculata* (Miq.) Scheff. is the same species as the plant Rumphius described.

PINANGA Blume

PINANGA PUNICEA (Blume) comb. nov.

Areca punicea Blume Rumphia 2 (1826) 72 (type!).

Seaforthia rumphiana Mart. Hist. Nat. Palm. 3 (1849) 314 (type!).

Drymophloeus rumphianus Mart. Hist. Nat. Palm. 3 (1849) 314 (type!).

Ptychosperma punicea Mig. Fl. Ind. Bat. 3 (1855) 31 (type!).

Pinanga ternatensis Scheff. in Ann. Jard. Bot. Buitenz. 1 (1876) 149.

Pinanga silvestris glandiformis II Rumph. Herb. Amb. 1:39.

Areca punicea Blume is based wholly on Rumphius's description of Pinanga silvestris glandiformis II, as are the brief descriptions of Drymophloeus rumphianus Mart. (Seaforthia rumphiana Mart.) and Ptychosperma punicea Miq. The species is undoubtedly a Pinanga and is probably the species described by Scheffer as Pinanga ternatensis. I have here adopted Blume's specific name, it being the oldest valid one. Sarasuac Camell, cited by Blume as a synonym of Areca punicea Blume, Rumphia 2 (1836) 73, is Heterospathe elata Scheff., a species originally described from Amboina material, and one that I cannot connect with any form described by Rumphius.

PINANGA GLOBULIFERA (Lam.) comb. nov.

Areca globulifera Lam. Encycl. 1 (1783) 241 (type!).

Areca oryzaeformis Giseke Prael. Ord. Nat. Pl. (1792) 76 (type!).

Pinanga silvestris oryzaeformis Rumph. Herb. Amb. 1: 40, t. 5, f. 2, B, C, D.

Nothing resembling the Rumphian species is represented in our Amboina collections, although the figure apparently represents a species of *Pinanga*. *Pinanga silvestris oryzaeformis* Rumph. is the whole basis of *Areca globulifera* Lam., which has been reduced to *Pinanga kuhlii* Blume, and which, if correctly placed, supplies a much older specific name for that species. Loureiro, Fl. Cochinch. (1790) 568, reduced the Rumphian plant to *Areca sylvestris* Lour., but the Cochin-China plant that he actually described is certainly not the same as the one Rumphius described and figured. Gaertner, Fruct. 1 (1788) 20, referred it to *Areca oryzaeformis* Gaertn., and the fruit he figured is probably that of *Pinanga kuhlii* Blume. *Seaforthia oryzaeformis* Mart., Hist. Nat. Palm. 3 (1839) 185, is merely a transfer

of *Areca oryzaeformis* Gaertn., to be typified by the plant Gaertner actually figured rather than by the Rumphian synonym he cites and from which he took the specific name.

ARECA Linnaeus

ARECA CATECHU Linn. Sp. Pl. (1753) 1189 (err. cathecu).

Pinanga (incl. II alba et III nigra) Rumph. Herb. Amb. 1: 26, t. 4.

The common betel-nut palm is not represented in our Amboina collections. The reduction was first made by Linnaeus, in Stickman Herb. Amb. (1754) 6, Amoen. Acad. 4 (1759) 118, which has been accepted by all authors, as it is manifestly the correct disposition of the form figured. Under this species Rumphius described four forms: namely, I Pinanga calapparia, which is apparently Actinorhytis calapparia H. Wendl. & Drude; II Pinanga alba and III Pinanga nigra, which are manifestly Areca catechu Linn.; and IV (unnamed), which I cannot place from the imperfect description given by him.

ARECA GLANDIFORMIS Lam. Encycl. 1 (1783) 241 (type!).

Pinanga silvestris glandiformis II Rumph. Herb. Amb. 1: 38, t. 6.

The Rumphian figure and description are the whole basis of *Areca glandiformis* Lam. It has been minutely described and figured by Blume, Rumphia 2 (1836) 73, t. 100, from Moluccan material.

COCOS Linnaeus

COCOS NUCIFERA Linn. Sp. Pl. (1753) 1188.

Palma indica nucifera major s. calappa Rumph. Herb. Amb. 1:1, 10, 11, 12, tt. 1-3.

Rumphius gives an extensive treatise on the coconut. The illustrations present a habit sketch, infructescence and inflorescence, details of the structure of the fruit, including germination, and t. 3 an abnormal form of the palm. He characterizes thirteen forms, most of which are referred by Blume, Miquel, and Hasskarl to various named varieties of Cocos nucifera Linn. The reduction of the illustrations was made by Linnaeus, in Stickman Herb. Amb. (1754) 6, Amoen. Acad. 4 (1759) 118, which is manifestly the correct disposition of them, and which has been accepted by all authors. While many distinct forms and varieties of the coconut occur, a clear understanding of them and their relationships is possible only through critical and long-continued field work, so that little is to be gained in attempting to reduce the numerous Rumphian forms to named and very imperfectly described varieties.

NIPA (NYPA) Wurmb

NIPA (NYPA) FRUTICANS Wurmb Verh. Bat. Genoots. 1 (1779) 350. Nypa Rumph. Herb. Amb. 1: 69, t. 16.

The illustration is an excellent one of the common nipa palm, and Nypa was reduced by Wurmb in the original publication of Nipa (Nypa) fruticans Wurmb. This is manifestly the correct disposition of it and has been accepted by all authors, although commonly appearing in literature as Nipa fruticans Thunb.

PALMAE OF UNCERTAIN STATUS

I am unable satisfactorily to determine the status of the few forms described by Rumphius immediately following *Cocus maldivicus*. They may or may not be the seeds or fruits of palms. These doubtful forms are as follows:

Compar mangae Rumph. Herb. Amb. 6: 216, t. 82, f. 1.

Cocus maldivicus minor Rumph. Herb. Amb. 6: 218, t. 82, f. 2, 3.

Cocus melindanus verus Rumph. Herb. Amb. 6: 219, t. 82, f. 4.

Calapput laut Rumph. Herb. Amb. 6: 219.

ARACEAE

POTHOS Linnaeus

POTHOS RUMPHII Schott Melet, 1 (1832) 21.

Scindapsus rumphii Presl Epim. (1851) 241.

Adpendix porcellanica Rumph. Herb. Amb. 5: 485, t. 182, f. 1.

Amboina, Paso, Robinson Pl. Rumph. Amb. 116, 117, October, 1913, on trees at low altitudes, locally known as tapinawa and tapinawa puti.

The Rumphian figure is cited by Presl, under *Scindapsus* rumphii Presl, and presumably is cited by Schott in the original publication of the species (not seen by me). The species is a very characteristic and strongly marked one, the specimens cited above agreeing well with the Rumphian figure and description and with *Pothos rumphii* Schott as currently interpreted.

POTHOS LONGIFOLIUS Presl Epim. (1851) 242.

Adpendix duplo folio Rumph. Herb. Amb. 5: 490, t. 184, f. 1-3.

AMBOINA, Hitoe lama, Robinson Pl. Rumph. Amb. 118, November, 1913, on trees, altitude about 50 meters.

Linnaeus originally reduced Adpendix duplo folio Rumph. to Pothos scandens Linn., which is very closely allied to Pothos longifolius Presl, and extends from India to Indo-China, Java, and Borneo. Pothos longifolius Presl is known from the Philippines, Sumatra, Java, and the Moluccas. The original reduc-

ARACEAE 125

tion was made in Stickman, Herb. Amb. (1754) 25, Amoen. Acad. 4 (1759) 133, Syst. ed. 10 (1759) 1252, Sp. Pl. ed. 2 (1763) 1374, which was followed by most of the early authors. Loureiro, Fl. Cochinch. (1790) 212, placed it under Flagellaria repens Lour.=Pothos loureirii Hook. & Arn. Hasskarl, Neue Schlüssel (1866) 150, has interpreted the three forms described and figured by Rumphius as follows: I major=Scindapsus officinalis Schott, most certainly wrong; II minor=Pothos rox-burghii DeVriese with question, but most certainly wrong, as the species is known only from India; and III=P. roxburghii DeVriese, with doubt. I can see no valid reason for considering that more than a single species is represented, and that is Pothos longifolius Presl.

POTHOS LATIFOLIUS Linn. in Stickman Herb. Amb. (1754) 25, Amoen. Acad. 4 (1754) 133, Syst. ed. 10 (1759) 1252 (type!).

Pothos tener Schott Aroid. 1 (1853) 24 (type!).

Scindapsus tener Presl Epim. (1851) 241.

Pothos gracilis Roxb. Fl. Ind. ed. 2, 1 (1832) 433.

Adpendix arborum Rumph. Herb. Amb. 5: 483, t. 181, f. 1, 2.

This is not represented in our Amboina collections and is a species of doubtful status. Pothos latifolius Linn. was based wholly on Rumphius's description and figure, the original description being as follows: "181. Adpendix arborum=Pothos latifolius, foliis ovatis, petiolo latioribus." Thus Linnaeus included both figures 1 and 2, that is, the forms indicated by Rumphius as parvifolia and media. To me they both appear to represent the same species, one in, or immediately following, anthesis; the other in fruit. Pothos tener Schott was based wholly on Adpendix arborum I Rumph. Herb. Amb. 5: 483, t. 181, f. 1; and, if I am correct in my surmise that but a single species is represented by the two figures, it becomes a synonym of Pothos latifolius Linn. Engler considers that Pothos tener Schott is apparently the same as the Bornean *Pothos barberianus* Schott. Pothos gracilis Roxb. was described from specimens grown in Calcutta, originating in Amboina, and is probably a synonym of Pothos latifolius Linn.; Roxburgh states that it had a great resemblance to Adpendix arborum as figured by Rumphius. It is not, however, mentioned in the latest monograph of the group, Engl. Pflanzenreich 21 (1905) 21-44, and is quite certainly not the Penang and Bornean form described under the name Pothos gracilis Roxb. by Engler in DC. Monog. Phan. 2 (1879) 91.

SCINDAPSUS Schott

SCINDAPSUS MARANTIFOLIUS Miq. Fl. Ind. Bat. 3 (1857) 187.

Cuscuaria marantifolia Schott Gen. Aroid. (1858) t. 80.

Cuscuaria rumphii Schott in Ann. Mus. Bot. Lugd. Bat. 1 (1863) 130.

Scindapsus cannaeformis Engl. in Bull. Soc. Tosc. Ort. 4 (1879) 271.

Aglaonema cuscuaria Miq. Fl. Ind. Bat. 3 (1857) 217 (type!).

Scindapsus cuscuaria Engl. & Krause in Engl. Pflanzenreich 37 (1908) 68, non Pothos cuscuaria Aubl.

Pothos cuscuaria Gmel. Syst. 1 (1796) 274 (type!), non Aubl. 1775. Adpendix cuscuaria latifolia Rumph. Herb. Amb. 5: 488, t. 183, f. 1.

AMBOINA, Soja, Way tommo, and near the town of Amboina, *Robinson Pl. Rumph. Amb. 114, 115*, August, 1913, on trees, altitude 7 to 250 meters, locally known as *kelady utan* and *daun mo*.

The specific name cuscuaria is invalid for this species. Pothos cuscuaria Aubl., Hist. Pl. Guiane Franç. (1775) 840, was based on specimens from South America with no reference to Rumphius, although the specific name may have been taken from Rumphius. Pothos cuscuaria Gmel., Syst. 1 (1796) 274, however, was based wholly on Rumphius, not on Aublet. Aglaonema cuscuaria Miq. was based on Pothos cuscuaria Gmel. (non Aubl.) and Cuscuaria latifolia Rumph., the latter being, accordingly, its type. Poiret, in Lam. Encycl. 5 (1804) 605, follows Gmelin, as do also Roemer and Schultes, Kunth, and Dietrich.

ACORUS Linnaeus

ACORUS CALAMUS Linn. Sp. Pl. (1753) 324.

Acorum palustre et terrestre Rumph. Herb. Amb. 5: 178, t. 72, f. 1.

The common sweet flag, amply described and fairly well figured by Rumphius, is not represented in our Amboina collections. It is found widely scattered in the Malayan region, sometimes cultivated, occasionally wild at higher altitudes. It was first reduced by Linnaeus in Stickman, Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 130, which has very generally been followed by later authors. Loureiro, Fl. Cochinch. (1790) 208, placed it under Orontium cochinchinense Lour.—Acorus cochinchinensis Schott.—Acorus calamus Linn. Schultes, Syst. 7 (1829) 174, retains Acorus terrestris Rumph. as a species distinct from A. calamus Linn., following Spreng., Syst. 2 (1825) 118, who in turn based Acorus terrestris Spreng. on Acorus calamus Lour. Engler, DC. Monog. Phan. 2 (1879) 217, cites the Rumphian figure and description under Acorus calamus Linn. var. terrestris (Spreng.) Engl.

ARACEAE 127

EPIPREMNUM Schott

EPIPREMNUM PINNATUM (Linn.) Engl. Pflanzenreich 37 (1908) 60.

Pothos pinnata Linn. Sp. Pl. ed. 2 (1763) 1374 (type!).

Scindapsus pinnatus Schott Melet. 1 (1832) 21.

Adpendix laciniata Rumph. Herb. Amb. 5: 489, t. 183, f. 2.

AMBOINA, Ayer putri and Amahoesoe, Robinson Pl. Rumph. Amb. 113, August, 1913, on trees at low altitudes, locally known as tapinawa.

Pothos pinnata Linn., as originally published, is based wholly on the description and figure of Rumphius's Adpendix laciniata. In addition to the synonyms given above, it has been cited by some authors under Rhaphidophora lacera Hassk, and Scindapsus pertusus Schott, both synonyms of Epipremnum pinnatum Engl. The species extends from India through Malaya to Polynesia.

AMORPHOPHALLUS * Blume

AMORPHOPHALLUS CAMPANULATUS (Roxb.) Blume ex Decne. in Ann. Mus. Hist. Nat. Paris 3 (1834) 366.

Arum campanulatum Roxb. Hort. Beng. (1814) 65, nomen nudum, Pl. Coromandel 3 (1819) 69, t. 272, Fl. Ind. ed. 2, 3 (1832) 509.

Arum rumphii Gaudich. Bot. Freyc. Voy. (1826) 427, t. 39.

Amorphophallus sativus Blume Rumphia 1 (1835) 145 (type!).

Conophallus ? sativus Schott Prodr. (1860) 35.

Tacca sativa Rumph. Herb. Amb. 5: 324, t. 112.

Tacca phallifera Rumph. quoad Taccae fungus Rumph. Herb. Amb. 5: 326, t. 113, f. 2.

Not represented in our Amboina collections. Tacca sativa Rumph, is perhaps a mixture of Tacca pinnatifida Forst, and Amorphophallus; Tacca phallifera Rumph. certainly is. description of the vegetative characters, however, manifestly applies to Amorphophallus campanulatus Blume; the figure is very poor. Linnaeus erroneously reduced Tacca sativa Rumph. to Dracontium polyphyllum Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131. Loureiro, Fl. Cochinch. (1790) 300, placed it under Tacca pinnatifida Forst. Roxburgh correctly placed it under Arum campanulatum Roxb.=Amorphophallus campanulatus, together with the inflorescence described as Taccae fungus and figured, t. 113, f. 2. Amorphophallus sativus Blume is based wholly on the Rumphian description and figure, and this species Engler, Pflanzenreich 48 (1911) 109, includes under species dubiae.

Tacca phallifera Rumph. is made up of Tacca pinnatifida Forst. and the inflorescence of Amorphophallus campanulatus

^{*} Retained name, Brussels Congress; Candarum Reichb. (1832) is older.

Blume, the plate presenting the vegetative parts of *Tacca*, its infructescence, and detached fruits, f. 1, a, b; and f. 2 the inflorescence of *Amorphophallus campanulatus* Blume, described by Rumphius as *Taccae fungus*. The latter figure is cited by Roxburgh in the original description of *Arum campanulatum* and is certainly correctly placed.

HOMALOMENA Schott

HOMALOMENA CORDATA (Houtt.) Schott Melet. 1 (1832) 20.

Dracontium cordatum Houtt. Handleid. 11 (1774-83) 200, t. 71, f. 2. Dracunculus amboinicus niger Rumph. Herb. Amb. 5: 322, t. 111, f. 2.

Amboina, Batoe merah, Robinson Pl. Rumph. Amb. 111, August 24, 1913, on shaded banks, altitude about 15 meters.

Dracunculus amboinicus, as figured by Rumphius, was erroneously reduced by Linnaeus to Arum divaricatum Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131. By Loureiro, Fl. Cochinch. (1790) 532, it was placed with doubt under Calla occulta Lour., which may be the same as the closely allied Homalomena aromatica Schott. By other authors it has been reduced to Homalomena rubescens Kunth, H. rubra Kunth, and other allied forms. The Amboina specimen cited above agrees with the figure given by Rumphius, agrees with the description of Dracunculus amboinicus niger, and agrees also with Homalomena cordata Schott as recently described by Engler, Pflanzenreich 55 (1912) 57. Rumphius does not indicate which of the four forms described under Dracunculus amboinicus he intended the figure to represent, but I agree with Engler in referring it to the one first described, namely, Dracunculus amboinicus niger.

The form described by Rumphius as Dracunculus amboinicus II albus, is apparently very closely allied to, if not identical with, Homalomena cordata (Houtt.) Schott, and may be the same as Homalomena aromatica (Roxb.) Schott, which is reported from Amboina by Engler; it can scarcely be Homalomena alba Hassk., to which Hasskarl reduced it, Neue Schlüssel (1866) 128, because as far as is known this species is confined to Java. Dracunculus amboinicus III ruber should be compared with both Homalomena cordata Schott and H. aromatica Schott. Hasskarl, following Kunth, reduced it to Homalomena rubescens Kunth, which is manifestly an error, as this species is not known from the Malay Archipelago. More comprehensive collections are neces-

ARACEAE 129

sary from Amboina before the exact status of these two forms can be determined.

SCHISMATOGLOTTIS Zollinger and Moritzi

SCHISMATOGLOTTIS CALYPTRATA (Roxb.) Zoll. & Mor. Syst. Verz. (1854) 83.

Calla calyptrata Roxb. Hort. Beng. (1814) 65, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 514.

Homalomena calyptratum Kunth. Enum. 3 (1841) 57.

Schismatoglottis longipes Miq. Fl. Ind. Bat. 3 (1859) 214.

Arisarum esculentum Rumph. Herb. Amb. 5: 321, t. 111, f. 1.

AMBOINA, Halong, Robinson Pl. Rumph. Amb. 112, September 26, 1913, river banks at an altitude of 40 meters, locally known as kasisi.

Linnaeus originally reduced Arum esculentum, through error, to Arum peregrinum Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131. The type of Calla calyptrata Roxb. was from Amboina, and Roxburgh cites the Rumphian figure and description in the original description as representing his species. Other names involved in the reduction are Colocasia humilis Hassk. and Schismatoglottis longipes Miq.

AGLAONEMA Schott

AGLAONEMA OBLONGIFOLIUM (Roxb.) Kunth Enum. 3 (1841) 55.

Calla oblongifolia Roxb. Hort. Beng. (1814) 65 (type!); Fl. Ind. ed. 2, 3 (1832) 516.

Aglaonema marantifolium Blume Rumphia 1 (1835) 153.

Scindapsus erectus Presl Epim. (1851) 241 (type!).

Arum aquaticum Rumph. Herb. Amb. 5: 312, t. 108.

Adpendix erecta Rumph. Herb. Amb. 5: 487, t. 182, f. 2.

Not represented in our Amboina collections. The figures and the descriptions of both the Rumphian species cited above agree closely with Aglaonema oblongifolium Kunth (A. marantifolium Blume) as currently interpreted. Arum aquaticum Rumph. is the whole basis of Calla oblongifolia Roxb. as originally published by Roxburgh, Hort. Beng. (1814) 65, by citation of the Rumphian figure; see C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 414, 419. The description subsequently published by Roxburgh was based on specimens cultivated at Calcutta, which originated in the Moluccas. Adpendix erecta Rumph. is the basis of Scindapsus erectus Presl and was also cited by Blume in the original description of Aglaonema marantifolium Blume. Linnaeus first reduced Arum aquaticum Rumph. to Arum ovatum Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1251, Sp. Pl. ed. 2 (1763) 1371, but this disposition of it was entirely wrong.

ALOCASIA Necker

ALOCASIA MACRORRHIZA (Linn.) Schott Melet. (1832) 18.

Arum macrorrhizon Linn. Sp. Pl. (1753) 965.

Arum mucronatum Lam. Encycl. 3 (1789) 12 (type!).

Arum silvestre I latifolium Rumph. Herb. Amb. 5:310.

Arum indicum sativum Rumph. Herb. Amb. 5: 308, t. 106.

Amboina, Kati-kati and Halong, Robinson Pl. Rumph. Amb. 110, September, 1913, near streams, altitude 40 to 70 meters, locally known as bira and bira puti.

Arum indicum sativum Rumph. was originally reduced by Linnaeus, with doubt, to Arum arborescens Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, but is entirely different from this species. Lamarck, Encycl. 3 (1789) 12, made it the type of his Arum mucronatum. Loureiro, Fl. Cochinch. (1790) 536, referred it to his Arum indicum, which is supposed to be a synonym of Colocasia indica Engl. Forster, Pl. Esculent. (1768) 58. correctly reduced it to Arum macrorrhizon Linn.=Alocasia macrorrhiza (Linn.) Schott. Rumphius very briefly described three forms; namely, I nigrum, II fuscum, and III album, the first of which Hasskarl, Neue Schlüssel (1866) 126, referred to typical Alocasia indica Schott, and the last two he referred to Colocasia indica Kunth var. atroviridis Hassk. and C. indica Kunth var. pallida Hassk., respectively, but Colocasia indica Kunth, non Engl., is supposed to be a synonym of Alocasia indica Schott. The descriptions are so very short that it is impossible definitely to determine just what forms were intended, but in all probability they were merely variants of Alocasia macrorrhiza (Linn.) Schott. I can see no valid reason for considering that Arum silvestre I latifolium Rumph., Herb. Amb. 5: 310 (non t. 107), represents other than a form of Alocasia macrorrhiza Schott; see Alocasia longiloba Mig.

ALOCASIA LONGILOBA Miq. Fl. Ind. Bat. 3 (1857) 207?

Arum silvestre II medium Rumph. Herb. Amb. 5:310, t. 107.

AMBOINA, Soja, in forests, altitude about 400 meters, Robinson Pl. Rumph. Amb. 109, August 2, 1913.

The specimen lacks the spathe, but presents the fruiting spadix. It unquestionably represents the form figured by Rumphius under Arum silvestre; and I consider that the figure conforms to Arum silvestre II medium rather than to Arum silvestre I latifolium, although it has very generally been referred to the latter. Arum silvestre I latifolium I take to be a form of Alocasia macrorrhiza Schott, above. Hasskarl, Neue Schlüssel (1866) 126, reduced Arum silvestre II medium to Alocasia montana Schott, certainly

ARACEAE 131

an erroneous disposition of it. The figure has been referred to various species—by Linnaeus, through error, to Arum sagittifolium Linn., in Stickman Herb. Amb. (1753) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1251; by Schott, Prodr. (1860) 144, to Alocasia indica Schott; and by Miquel, Fl. Ind. Bat. 3 (1857) 207, with doubt to Alocasia longiloba Mig. Alocasia indica Schott is a species of uncertain status; and, as generally interpreted, the specific name is probably invalid. It is supposed to be Arum indicum Roxb., Fl. Ind. ed. 2, 3 (1832) 498, non Arum indicum Lour., Fl. Cochinch. (1790) 536, but the specific name should go with Loureiro's species, which is supposed to be Colocasia indica. I have not seen Schott's original publication of Alocasia indica. At any rate, the plant figured by Rumphius as Arum silvestre has little in common with the one described by Roxburgh as Arum indicum or with the one described by Loureiro under the same name.

COLOCASIA Schott

COLOCASIA ESCULENTA (Linn.) Schott Melet. 1 (1832) 18.

Arum esculentum Linn. Sp. Pl. (1753) 965.

Arum colocasia Linn. Sp. Pl. (1753) 965.

Colocasia antiquorum Schott Melet. 1 (1832) 18.

Arum aegyptium Rumph. Herb. Amb. 5: 313, t. 109.

Caladium aquatile Rumph. Herb. Amb. 5: 318, t. 110, f. 1.

Taro is not represented in our Amboina collections, although doubtless the plant, in several forms, is still cultivated in Amboina as in all parts of the Indo-Malayan region. Like many widely cultivated plants, the species is enormously variable; and, being poorly represented in herbaria, no satisfactory arrangement of the numerous forms and varieties has been proposed, nor is any attempted arrangement of these likely to prove satisfactory unless based on a comprehensive collection of living plants. naeus originally reduced Arum aegyptium Rumph. to Arum colocasia Linn., and Caladium aquatile Rumph. to Arum esculentum Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1251, and by later authors both have been referred to the above names and to numerous other synonyms of the species. What is apparently the oldest valid specific name for the collective species is here adopted. names involved in the reduction of the forms figured and described by Rumphius are Arum peltatum Lam., Colocasia vera Hassk., various proposed varieties of Colocasia antiquorum Schott, Caladium esculentum Vent., Caladium nymphaeifolium Willd., and Caladium esculentum var. aquatilis Hassk. Under

Arum aegyptium Rumphius describes eight forms or varieties, and under Caladium aquatile two, all of which are reducible to Colocasia esculenta Schott, sensu latiore. I cannot agree with W. F. Wight, Contr. U. S. Nat. Herb. 9 (1905) 206, in interpreting the genus Caladium as typified by the Rumphian description. The type of Caladium, the plant figured, and the one to which the description applies, is Caladium bicolor Vent.

TYPHONIUM Schott

TYPHONIUM DIVARICATUM (Linn.) Decne. in Nuov. Ann. Mus. Paris 3 (1834) 367; Blume Rumphia 1 (1835) 130 var. ROBUSTUM Kunth. Enum. 3 (1841) 26.

Arum divaricatum Linn. Sp. Pl. ed. 2 (1863) 1369.

Typhonium javanicum Miq. Fl. Ind. Bat. 3 (1857) 193.

Arisarum amboinicum Rumph. Herb. Amb. 5: 319, t. 110, f. 2.

This species is not represented in our Amboina collections. The reduction and synonymy follow Engler, in DC. Monog. Phan. 2 (1879) 612. Linnaeus referred it to Arum trilobum Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, and to A. trilobatum Linn., in Syst. ed. 10 (1759) 1251, Sp. Pl. ed. 2 (1763) 1369, in which he was followed by all authors until Blume placed it under Typhonium divaricatum Decne. Hasskarl, Neue Schlüssel (1866) 127, placed Arisarum amboinicum as the equivalent of Typhonium divaricatum Decne.; but, probably through oversight, he did not cite the figure.

PISTIA Linnaeus

PISTIA STRATIOTES Linn. Sp. Pl. (1753) 963.

Zala asiatica Lour. Fl. Cochinch. (1790) 405.

Pistia minor Blume Rumphia 1 (1835) 78 (type!).

Plantago aquatica Rumph. Herb. Amb. 6: 177, t. 74, f. 2.

Plantago aquatica II minor Rumph. Herb. Amb. 6: 177.

This common and well-known species is not represented in our Amboina collections. The reduction to *Pistia stratiotes* Linn. was first made by Linnaeus, in Stickman Herb. Amb. (1754) 28, Amoen. Acad. 4 (1759) 136, Syst. ed. 10 (1759) 1249, which has been followed by practically all authors. Loureiro, Fl. Cochinch. (1790) 405, cites it under *Zala asiatica* Lour., a synonym of *Pistia stratiotes* Linn. The form described by Rumphius as Plantago aquatica II minor is the whole basis of *Pistia minor* Blume, which is manifestly only a reduced form of *Pistia stratiotes* Linn., due to habitat. The plant is enormously variable in size, depending on the age of the individuals, habitat, etc., the tendency, where the plants are very numerous and crowded, being to a great reduction in size.

ARACEAE OF UNCERTAIN STATUS

Two forms very briefly described or mentioned by Rumphius are entirely indeterminable; these are Erva de Sta Maria Rumph., Herb. Amb. 5: 326, and Itelpou Rumph., l. c. 327. Hasskarl thought that the former might be a representative of the Araceae, which is probably correct, and that the latter might be Brachyspatha variabilis Schott=Amorphophallus variabilis Blume; neither was from Amboina.

LEMNACEAE

LEMNA Linnaeus

LEMNA sp.

Lens palustris Rumph. Herb. Amb. 6: 178.

Hasskarl, Neue Schlüssel (1866) 180, placed this under Lemna minor Linn., following Miquel. Rumphius gives no description, and the plant he named may have been any of the Malayan Lemnaceae of the genus Lemna or the genus Spirodela.

FLAGELLARIACEAE

FLAGELLARIA Linnaeus

FLAGELLARIA INDICA Linn. Sp. Pl. (1753) 333.

Palmijuncus laevis Rumph. Herb. Amb. 5: 120, t. 59, f. 1.

AMBOINA, Paso and Eri, Robinson Pl. Rumph. Amb. 211, September and October, 1913, in thickets near the seashore.

The original reduction of *Palmijuncus laevis* Rumph. to *Flagellaria indica* was made by Linnaeus, in Stickman Herb. Amb. (1753) 20, Amoen. Acad. 4 (1759) 129, Syst. ed. 10 (1759) 989, Sp. Pl. ed. 2 (1762) 475, which has been followed by all authors, and which is certainly the correct disposition of it.

BROMELIACEAE

ANANAS Tournefort

ANANAS COMOSUS (Linn.) comb. nov.

Bromelia ananas Linn. Sp. Pl. (1753) 285.

Bromelia comosa Linn. in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130 (type!).

Ananas sativus Schultes f. Syst. 7 (1830) 1283.

Ananassa sativa Lindl. Bot. Reg. (1827) sub t. 1068.

Anassa domestica Rumph. Herb. Amb. 5: 227, t. 81.

AMBOINA, Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 382, October 3, 1913, semicultivated, locally known as nanas.

The common pineapple, as described and figured by Rumphius, is the whole basis of *Bromelia comosa* Linn. as originally pub-

lished by Linnaeus in the year 1754. It is thus the oldest valid specific name for the species. The Rumphian figure, which is excellent, has very generally been cited by various authors under one or the other of the synonyms given above. The forms indicated by Rumphius as mas, femina, and alba are apparently merely cultural forms of the common pineapple.

COMMELINACEAE

COMMELINA Linnaeus

COMMELINA NUDIFLORA Linn. Sp. Pl. (1753) 41.

Arundinella I minor Rumph. Herb. Amb. 6:23, t. 9, f. 2.

AMBOINA, Soja and Roemah tiga, Robinson Pl. Rumph. Amb. 407, July and August, 1913, locally known as kangkong.

The Rumphian plant has generally been reduced to Commelina benghalensis Linn., and the description, in part, seems to apply to that species. The figure is very poor, but the description is at least sufficiently definite to place the plant Rumphius intended in Commelina. Burman f., Fl. Ind. (1768) 16, referred it to Commelina benghalensis Linn., while Commelina rumphii Kostel., Allg. Med.-Pharm. Fl. 1 (1831) 126, may have been based wholly or in part on Rumphius (publication not seen).

COMMELINA BENGHALENSIS Linn. Sp. Pl. (1753) 41.

Arundinella II major Rumph, Herb. Amb. 6:24.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 406, July 22, 1913, locally known as kangkong ayer.

Hasskarl, Neue Schlüssel (1866) 155, has suggested Commelina communis Linn. as the proper disposition of Arundinella II major, but the description appears to me better to apply to Commelina benghalensis Linn.

ANEILEMA R. Brown

ANEILEMA VITIENSE Seem. var. PETIOLATA C. B. Clarke in DC. Monog. Phan. 3 (1881) 220.

Arundinella IV Rumph. Herb. Amb. 6:25.

AMBOINA, Soja and Kaju poeti, Robinson Pl. Rumph. Amb. 408, August, 1913, along roadsides and in forests.

Whether the plant is the above form or the very closely allied *Aneilema monadelphum* Kunth, it is undoubtedly the form that Rumphius described. Hasskarl, Neue Schlüssel (1866) 155, expressed the opinion that it was some species of *Gramineae*, but the characters indicated by Rumphius for *Arundinella IV* all apply to this species of *Aneilema*.

CYANOTIS Don

CYANOTIS MOLUCCANA (Roxb.) Merr. in Philip. Journ. Sci. 2 (1907).

Bot. 266.

Commelina moluccana Roxb. Fl. Ind. ed. 2, 1 (1832) 172. Commelina unifora Hassk. Commel. Ind. (1870) 104. Arundinella III aquatica Rumph. Herb. Amb. 6: 24?

This reduction of *Arundinella III aquatica* is merely a suggestion. However, it may be merely *Commelina obtusifolia* Vahl, as suggested by Hasskarl, Neue Schlüssel (1866) 155, which is supposed to be a synonym of *Commelina nudiflora* Linn.

FLOSCOPA Loureiro

FLOSCOPA SCANDENS Lour. Fl. Cochinch. (1790) 193.

Arundinella V Rumph. Herb. Amb. 6:25.

AMBOINA, in sago swamps near the town of Amboina, Robinson Pl. Rumph. Amb. 409, July, 1913, locally known as kangkong ayer.

The reduction follows Hasskarl, Neue Schlüssel (1866) 165, who suggests $Floscopa\ paniculata\ Hassk.\ (=F.\ scandens\ Lour.)$, as the proper disposition of $Arundinella\ V$ of Rumphius.

PONTEDERIACEAE

MONOCHORIA Presl

MONOCHORIA VAGINALIS (Burm. f.) Presl Rel. Haenk. 1 (1827) 128.

Pontederia vaginalis Burm. f. Fl. Ind. (1768) 80.

Olus palustre Rumph. Herb. Amb. 6: 178, t. 75, f. 1.

AMBOINA, in grassy pools near the town of Amboina, Robinson Pl. Rumph. Amb. 225, July 25, 1913.

Olus palustre was first reduced to Monochoria (Pontederia) vaginalis by Linnaeus, Mant. 2 (1771) 222, this certainly being the correct disposition of it.

Olus palustre femina Rumph., l. c. 178, is probably merely a form of *Monochoria vaginalis* Presl, approaching *M. vaginalis* var. plantaginea Solms, and possibly represented by Pl. Rumph. Amb. 224 from Amboina, August 23, 1913. Hasskarl, Neue Schlüssel (1866) 180, suggests that Olus palustre femina is Monochoria sagittata Kunth=M. hastata Presl, but the description hardly warrants this disposition of it.

STEMONACEAE

STEMONA Loureiro

STEMONA TUBEROSA Lour. Fl. Cochinch. (1790) 404.

Roxburghia gloriosoides Roxb. Pl. Coromand. 1 (1795) 29, t. 32. Ubium polypoides I album Rumph. Herb. Amb. 5: 364, t. 129.

AMBOINA Paso Robinson Pl Primah Amb 805 October 20 1012 al

Amboina, Paso, Robinson Pl. Rumph. Amb. 295, October 29, 1913, climbing over trees along the seashore.

Ubium polypoides Rumph. was correctly reduced to Stemona tuberosa by Loureiro in the original description of that species, in which disposition of it later authors have generally concurred, including C. H. Wright in his paper on the genus Stemona, Journ. Linn. Soc. Bot. 22 (1896) 490–496.

STEMONA MOLUCCANA (Blume) C. H. Wright in Journ. Linn. Soc. Bot. 22 (1896) 494.

Roxburghia moluccana Blume Enum. Pl. Jav. 1 (1827) 9 (type!). Ubium polypoides II nigrum Rumph. Herb. Amb. 5:365.

This species is figured and fully described by Dr. J. J. Smith, Ic. Bogor. 3 (1897) 111–114, t. 245, 246. Wright's and Blume's descriptions are entirely inadequate. It is by no means certain that the two forms described by Rumphius are really distinct, or that the form figured by him, which I have placed under Stemona tuberosa Lour., really belongs with Loureiro's species. Stemona tuberosa Lour. and S. moluccana C. H. Wright are very closely allied. In this connection it is of interest to note that Dr. Robinson considered that his specimen represented Ubium polypoides II nigrum Rumph. rather than U. polypoides I album Rumph. where I have placed it.

LILIACEAE

ALOE Linnaeus

ALOE VERA Linn. Sp. Pl. (1753) 320.

Sempervivium indicum majus Rumph. Herb. Amb. 5: 271.

This was apparently correctly placed by Henschel, Vita Rumph. (1833) 177, who considered it to be *Aloe perfoliata* Linn. var. vera Linn. The species is widely cultivated for medicinal purposes in the Malayan region.

DIANELLA Lamarck

DIANELLA ODORATA Blume Enum. 1 (1827) 13.

Gladiolus odoratus indicus Rumph. Herb. Amb. 5: 185, t. 73.

AMBOINA, Way tommo and Soja road, Robinson Pl. Rumph. Amb. 505, August, 1913, on grassy slopes and barren hills, altitude 50 to 300 meters.

This was reduced by Linnaeus to *Dracaena ensifolia* Linn. in the original description of that species, Mant. 1 (1767) 63, but his description seems to have been based on actual specimens. At any rate *Dianella ensifolia* (Linn.) DC., as currently interpreted, is not the same as the form that Rumphius described and figured. Lamarck, Encycl. 2 (1786) 276, cites it under *Dianella nemorosa*, but *Dianella nemorosa* Lam. was based on specimens from Bourbon and Isle of France and is a distinct species. Gladiolus odoratus indicus Rumph. is unquestionably

identical with *Dianella odorata* Blume, to which it was referred by Blume, Schultes, Kunth, and other authors; see Hallier f., in Nova Guinea 8 (1914) 996.

PLEOMELE Salisbury

PLEOMELE ANGUSTIFOLIA (Roxb.) N. E. Br. in Kew Bull. (1914) 277.

Dracaena angustifolia Roxb. Hort. Beng. (1814) 24 (type!), Fl. Ind. ed. 2, 2 (1832) 155.

Terminalis angustifolia Rumph. Herb. Amb. 4:81, t. 35.

AMBOINA, Amahoesoe, Robinson Pl. Rumph. Amb. 506, August 28, 1913, near the seashore, locally known as chamara.

Terminalis angustifolia Rumph. was originally discussed by Lamarck, Encycl. 2 (1786) 324, under Dracaena reflexa Lam., as possibly representing that species. Lamarck's species, however, is quite different from Roxburgh's and is Pleomele reflexa N. E. Br. Terminalis angustifolia Rumph. is the whole basis of Dracaena angustifolia Roxb. as originally published, in the Hortus Bengalensis (1814) 24, by citation of the Rumphian figure. The description, later published by Roxburgh, based on an Amboina specimen cultivated in the botanic garden at Calcutta, unquestionably applies to the same species. Cordyline rumphii Hook. is also referable here as a synonym, at least in part.

.TAETSIA Medicus

(Cordyline auct., non Adanson)

TAETSIA FRUTICOSA (Linn.) comb. nov.

Convallaria fruticosa Linn. in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 126 (type!), Syst. ed. 10 (1759) 984.

Asparagus terminalis Linn. Sp. Pl. ed. 2 (1762) 450.

Dracaena terminalis Rich. in Lam. Encycl. 2 (1786) 324.

Calodracon terminalis Planch. Fl. des Serres I 6 (1850-51) 137.

Terminalia fruticosa Goepp. in Nov. Act. Acad. Nat. Cur. 25 (1855) 53.

Cordyline terminalis Kunth in Abh. Acad. Berlin (1820) 30, Enum. 5 (1850) 25.

Taetsia terminalis W. F. Wight in Contr. U. S. Nat. Herb. 9 (1905) 382.

Terminalis alba domestica Rumph. Herb. Amb. 4: 79, t. 34, f. 1.

Terminalis alba silvestris Rumph. Herb. Amb. 4:80.

Terminalis rubra Rumph. Herb. Amb. 4: 80, t. 34, f. 2.

Terminalis rubra silvestris Rumph. Herb. Amb. 7: 40, t. 20.

AMBOINA, Batoe merah, Hoenoet, and Mahija, Robinson Pl. Rumph. Amb. 507, August and October, 1913, on hills and in light forests, altitude 30 to 150 meters, locally known as pandusti, pandusti puti, and daun pandusti.

The form cited above is exactly Terminalia alba silvestris

Rumph., but there is little or no reason for considering that the other three forms named by Rumphius represent distinct species. Taetsia fruticosa is widely distributed in the Indo-Malayan region and presents considerable variation in its cultivated forms. especially in the color of its leaves, which vary from green to reddish or purple. "Terminalis Rumph, amb, 4 p. 79, t. 34" is the whole basis of Convallaria fruticosa Linn. (1754), but the original description of Asparagus terminalis Linn, was manifestly based on an actual specimen; Terminalis Rumph, is cited as a synonym. On plate 34, two forms are figured by Rumphius. fig. 1 representing the plant with greenish leaves (T. alba domestica), and fig. 2, the plant with reddish or purplish leaves (T. rubra); the latter is manifestly only a color variant of the former. Kunth, Enum. 5 (1850) 25, considered that Terminalis rubra did not belong to Cordyline (Taetsia) or even in the Liliaceae, but the figure certainly represents the common and well-known Cordyline terminalis Kunth=Taetsia fructicosa (Linn.) Merr. I consider Terminalis alba silvestris Rumph. to be referable to the same species as the other forms described by Rumphius. The chief objection to the reduction of Terminalis rubra silvestris to Taetsia fruticosa is that the figure represents the nerves of the leaves as altogether too prominent; but this may be due to an error on the part of the artist. Hasskarl, Neue Schlüssel (1866) 190, suggested that it was the same as Cordyline jacquinii Kunth var. rubens. Hassk., but Cordyline jacquinii Kunth is supposed to be a synonym of C. terminalis.

Taetsia Medic. is here deliberately accepted in place of Cordy-line as the proper generic name of this plant, as it is manifestly the oldest valid one for the genus, in spite of the fact that Cordyline Commers., ex Juss. Gen. (1789) 41, is retained in the list of nomina conservanda adopted by the Vienna Botanical Congress in preference to Terminalis Rumph. The Rumphian designation has no standing as a generic name. Cordyline Adanson (1763) is the same as Sansevieria Thunb. and antedates Thunberg's name. In adopting Taetsia, I agree with N. E. Brown,* who, while retaining Cordyline, states: "At the same time, however, my personal view of the case would be to abolish the use of the name Cordyline altogether, in consequence of the great confusion connected with it, and replace it by that of Taetsia."

^{*} Kew Bull. (1914) 275.

SMILAX Linnaeus

SMILAX JAVENSIS A. DC. in DC. Monog. Phan. 1 (1878) 175.

Pseudochina amboinensis Rumph. Herb. Amb. 5: 437, t. 161.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 504, September 18, 1913, in thickets along the seashore, ascending to an altitude of at least 40 meters, locally known as tali baduri.

This was originally reduced by Linnaeus to Smilax china Linn., in Stickman Herb. Amb. (1754) 24, but in Amoen. Acad. 4 (1759) 133, the reference to Smilax china is excluded, although Ubium nummularium, t. 162 (=Dioscorea nummularia Lam.!), is erroneously given as the equivalent of Smilax china Linn. his Mantissa 2 (1771) 499, Linnaeus again erroneously referred Pseudochina amboinensis Rumph. to Smilax zeylanica Linn., which was followed by all subsequent authors up to the year 1878, when A. de Candolle suggested that it might be the same as Smilax javensis A. DC. I know A. de Candolle's species only by description, but the description applies very closely to the Amboina specimen cited above, so that this is probably the correct disposition of Pseudochina amboinensis Rumph. However, both Smilax javensis A. DC. and the Amboina specimen should be critically compared with the Australian Smilax australis R. Br., which is a very closely allied and, perhaps, identical form.

SMILAX LEUCOPHYLLA Blume Enum. Pl. Jav. 1 (1827) 18.

Pseudochina nigra Rumph. Herb. Amb. 5: 439.

AMBOINA, Negri lama, Robinson Pl. Rumph. Amb. 503, August 8, 1913, climbing on trees, altitude about 15 meters, locally known as tali baduri.

This appears to be the correct disposition of *Pseudochina* nigra Rumph., although Hasskarl, Neue Schlüssel (1866) 144, considered it to be referable to the Australian S. glycyphylla Sm., a species known only from Australia, and quite different from S. leucophylla Blume. The Philippine Smilax vicaria Kunth is probably not specifically distinct from Blume's species.

SMILAX LEUCOPHYLLA Blume var. PLATYPHYLLA var. nov.

Pseudochina alba latifolia Rumph. Herb. Amb. 4: 438?

Amboina, Lateri, Robinson Pl. Rumph. Amb. 502 (type), September 9, 1913, in forests, altitude about 250 meters, locally known as tali baduri.

Ramis distanter crasse aculeatis; foliis coriaceis, usque ad 30 cm longis et 16 cm latis.

This may prove to be specifically distinct from *Smilax leuco-phylla* Blume when more material is available for study. It is well characterized by its very large leaves, long petioles, and

long infructescences. The petioles, including the very prominent sheathing base, are 5 to 6 cm in length. The infructescences are about 20 cm long, with at least four long-peduncled umbels. Fruits globose, about 1 cm in diameter.

It may or may not be the same as *Pseudochina alba latifolia* Rumph., but it is quite certain that the Rumphian plant is not the same as *Smilax villandia* Ham.=*S. indica* Vitm. under which name it is briefly discussed by Hasskarl.

SMILAX CHINA Linn. Sp. Pl. (1753) 1029?

Smilax sarmentis spinulosis etc. Rumph. Herb. Amb. 7: 72, t. 30? Radix chinae Rumph. Herb. Amb. 5: 441?

The identity of the two Rumphian synonyms cited above can only be surmised. Hasskarl, Neue Schlüssel (1866) 144, considers *Radix chinae* to be the same as *Smilax aspera* Linn., and the other as possibly representing *S. bauhinioides* Kunth. Plate 30 of the Auctuarium is missing in our copy of the Herbarium Amboinense.

AMARYLLIDACEAE

CRINUM Linnaeus

CRINUM ASIATICUM Linn. Sp. Pl. (1753) 292.

Crinum toxicarium Roxb. Hort. Beng. (1814) 23 (type!), Fl. Ind. ed. 2, 2 (1832) 134.

Radix toxicaria I major Rumph. Herb. Amb. 6:155, t. 69.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 130, August 30, 1913, along the seashore, locally known as bauang laut.

Radix toxicaria Rumph. was originally reduced by Linnaeus to Crinum asiaticum Linn., in Stickman Herb. Amb. (1754) 28, Amoen. Acad. 4 (1759) 136, Syst. ed. 10 (1759) 976, a reduction that is certainly correct, and one that has been accepted by most authors. It is the type of Crinum toxicarium Roxb., which was based wholly on the Rumphian figure and description, Hort. Bengal. (1814) 23; see C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 413. It was cited later in the very brief description given in the second edition of the Flora Indica. The species is very widely distributed along the seashores of the Indo-Malayan and Polynesian regions; it is exceedingly variable in size, depending on the age of the plant and on its habitat. The form very briefly described by Rumphius as Radix toxicaria III montana, l. c. 156, from Ceram, is probably merely a dwarfed form of Crinum asiaticum Linn.

CRINUM RUMPHII sp. nov.

Radix toxicaria II terrestris Rumph. Herb. Amb. 6: 156.

AMBOINA, Hitoe lama, Robinson Pl. Rumph. Amb. 131 (type), October 8, 1913, in forests, altitude about 200 meters, locally known as pohon tolok.

Planta magna, glabra; foliis ut videtur numerosis, usque ad 70 cm longis et 18 cm latis, chartaceis, acutis, basi angustatis, petiolo circiter 30 cm longo. Floribus numerosis, breviter pedicellatis, tubo circiter 15 cm longo, segmentis lineari-lanceolatis, circiter 14 cm longis et 6 mm latis.

A large, entirely glabrous plant. Leaves apparently numerous, when dry dark-olivaceous chartaceous, about 70 cm long and 18 cm wide, acute, base narrowed, the petiole about 20 cm long, and when dry and flattened out 2.5 to 3 cm wide. Peduncle not seen. Flowers numerous, white, at least 20 to each peduncle, the spathe-valves about 18 cm long and 3 cm wide, narrowed upward, subacute. Pedicels 1 to 1.5 cm long, the perianth-tube slender, including the ovary about 15 cm long. Flowers white, the filaments lilac. Segments linear-lanceolate, about 14 cm long and 6 mm wide, acute. Fruit not seen.

A species well characterized by its very large leaves and long slender perianth-tube. It is manifestly in the same group as *Crinum asiaticum* Linn., but differs from that species in many characters, as well as in its entirely different habitat. Hasskarl, Neue Schlüssel (1866) 178, thought that *Radix toxicaria II terrestris* might be the same as *Crinum procerum* Carey, which, however, is a synonym of *C. asiaticum* Linn.

CRINUM ZEYLANICUM Linn. Syst. ed. 12 (1767) 236.

Amaryllis zeylanica Linn. Sp. Pl. (1753) 293. Amaryllis lineata Lam. Encycl. 1 (1783) 123. Tulipa javana Rumph. Herb. Amb. 5: 306, t. 105.

This species is not represented in our Amboina collections, although doubtless it is still cultivated in Amboina as it is in other parts of Malaya. Rumphius states that it was introduced into Amboina from Java about 1670. The figure is an excellent representation of *Crinum zeylanicum* Linn. It was first reduced by Linnaeus to *Amaryllis zeylanica* Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 977, Sp. Pl. ed. 2 (1762) 421, which as *Crinum zeylanicum* Linn. has very generally been accepted as the correct disposition of *Tulipa javana* Rumph.

EURYCLES Salisbury

EURYCLES AMBOINENSIS (Linn.) Lindl. in Loud. Encycl. Pl. (1829) 242.

Pancratium amboinense Linn. Sp. Pl. (1753) 291.

Pancratium narbonense Linn. in Stickman Herb. Amb. (1754) 28 (type!).

Amaryllis rotundifolia Lam. Encycl. 1 (1783) 124.

Eurycles silvestris Salisb. in Trans. Hort. Soc. 1 (1812) 337.

Cepa silvestris Rumph. Herb. Amb. 6: 160, t. 70, f. 1.

This widely distributed, well-known, characteristic species is not represented in our Amboina collections. Linnaeus, in Stickman Herb. Amb. (1754) 28, first reduced Cepa silvestris Rumph. to Pancratium narbonense Linn.; this name, apparently a lapsus calami for P. amboinense, is not listed in Index Kewensis and, being based wholly on Rumphius, thus becomes a synonym of Eurycles amboinensis Lindl. In the reprint of Stickman's paper, Amoen. Acad. 4 (1759) 136, Syst. ed. 10 (1759) 976, Sp. Pl. ed. 2 (1762) 419, it is properly placed under Pancratium amboinense Linn.—Eurycles amboinensis Lindl. Willdenow, Sp. Pl. 2 (1799) 47, cites it under Crinum nervosum L'Hérit.; and other authors cite it under Amaryllis rotundifolia Lam., Eurycles coronata Salisb., E. nervosa Roem., and E. silvestris Salisb.—all synonyms of E. amboinensis (Linn.) Lindl.

CURCULIGO Gaertner

CURCULIGO ORCHOIDES Gaertn. Fruct. 1 (1788) 63, t. 16.

Curculigo rumphiana Schultes Syst. 7² (1830) 757 (type!).

Orchis amboinica major II Rumph. Herb. Amb. 6: 117, t. 54. f. 1.

AMBOINA, Batoe gadjah, Robinson Pl. Rumph. Amb. 128, August 5, 1913, on open hillsides, altitude about 150 meters.

Orchis amboinica major II, as described and figured by Rumphius, was cited by Gaertner in the original description of Curculigo orchoides Gaertn. as a synonym of his species, and the Amboina specimen cited above agrees with the species as currently interpreted. Most authors have followed Gaertner in this reduction, but Schultes, in a discussion following the description of Curculigo orchoides, considers the Rumphian plant to represent a distinct species, which he called Curculigo rumphiana Schultes and which was based wholly on the Rumphian reference cited above. Curculigo rumphiana Schultes is not listed in Index Kewensis, and I consider it to be merely a synonym of the much older name, Curculigo orchoides Gaertn.

CURCULIGO CAPITULATA (Lour.) O. Kuntze Rev. Gen. Pl. 1 (1891)

Leucojum capitulatum Lour. Fl. Cochinch. (1790) 199.

Curculigo recurvata Dryander in Ait. Hort. Kew. ed. 2, 2 (1811) 253. Curculigo sumatrana Roxb. Hort. Beng. (1814) 24 (type!).

Involucrum s. angraecum terrestre tertium Rumph. Herb. Amb. 6: 114, t. 53.

AMBOINA, Kati-kati, Robinson Pl. Rumph. Amb. 129, October 7, 1913, on banks, altitude about 80 meters.

This was cited by Loureiro, Fl. Cochinch. (1790) 13, under *Phyllodes placentaria* Lour.=*Phrynium capitatum* Willd., a species that is entirely different from *Curculigo capitulata* O. Kuntze. Poiret, in Lam. Encycl. Suppl. 5 (1817) 645, referred it to *Curculigo latifolia* Dry., in which he was followed by numerous authors. Henschel and Pritzel refer it to *Curculigo recurvata* Dry. It is the actual type of *Curculigo sumatrana* Roxb., as published in Hort. Beng. (1814) 24, by citation of the Rumphian figure; see C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 413. *Curculigo sumatrana* Roxb., as actually described from Sumatran specimens later, Roxburg Fl. Ind. ed. 2, 2 (1832) 146, seems to be distinct and is generally cited as a synonym of *Curculigo latifolia* Dryand.

PANCRATIUM Dillenius

PANCRATIUM ZEYLANICUM Linn. Sp. Pl. (1753) 290. Lilium indicum Rumph. Herb. Amb. 6: 161, t. 70, f. 2.

This common and well-known species, excellently figured by Rumphius, is not represented in our Amboina collections. It occurs here and there in the vicinity of towns and habitations throughout the Malayan region. *Lilium indicum* Rumph. was first reduced to *Pancratium zeylanicum* Linn., in Stickman Herb. Amb. (1754) 28, Amoen. Acad. 4 (1759) 136, Sp. Pl. ed. 2 (1762) 417, which is certainly the correct disposition of it, and which has been accepted by subsequent authors.

The form described by Rumphius, in the same chapter, as Lilium indicum javanicum, Herb. Amb. 6:162, a Javan plant with yellow flowers, is indeterminable from the data at present available. Hasskarl, Neue Schlüssel (1866) 178, has suggested that it might be *Calostemma luteum* Sims, but it is entirely improbable that this Australian species had been introduced into Java at the time when Rumphius wrote his account.

POLIANTHES Linnaeus

POLIANTHES TUBEROSA Linn. Sp. Pl. (1753) 316.

Amica nocturna Rumph. Herb. Amb. 5: 285, t. 98.

The tuberose is not represented in our Amboina collections, but is probably still cultivated in Amboina, as it is in various parts of the Malayan region and the Philippines. Amica nocturna Rumph. was first reduced to Polianthes tuberosa Linn. by Linnaeus, in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 984, Sp. Pl. ed. 2 (1762) 453, which is certainly the correct disposition of it, and which has been accepted by all subsequent authors.

AGAVE Linnaeus

AGAVE CANTALA Roxb. Hort. Beng. (1814) 25, nomen nudum.

Furcraea cantala Haworth Syn. Pl. Succul. Suppl. (1819) 42.

Agave cantula Roxb. Fl. Ind. ed. 2, 2 (1832) 167.

Agave rumphii Hassk. in Hoev. & DeVriese Tijdschr. 10 (1843) 121. Aloe americana Rumph. Herb. Amb. 5: 273, t. 94.

The common maguey plant is not represented in our Amboina collections. Aloe americana Rumph, was originally reduced by Linnaeus to Aloe vivipara Linn., in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, while in the Syst. ed. 10 (1759) 986, Sp. Pl. ed. 2 (1762) 461, he placed it under Agave vivipara Linn. in which he was followed by various authors. This, however, seems to be a different species, originally based on material from tropical America. Agave cantala Roxb., as originally used, is a nomen nudum, but the spelling of the specific name is fixed by Haworth's publication of Furcraea cantala in 1819, with a reference to Roxburgh. However, Roxburgh himself published the name, with a brief description and a reference to Rumphius, as Agave cantula Roxb. Agave rumphii Hassk. is apparently typified by *Aloe americana* Rumph. While the species is of Mexican origin, having been introduced into the Philippines at an early date by the Spaniards, the Indo-Malayan form has not as yet been satisfactorily connected with any described American species.

TACCACEAE

TACCA * Forster

TACCA PINNATIFIDA Forst. Char. Gen. (1776) 70, t. 35.

Tacca dubia Schultes Syst. 7¹ (1829) 167 (type!). Tacca litorea Rumph. Herb. Amb. 5: 328, t. 114.

Tacca phallifera Rumph. Herb. Amb. 5: 326 p. p., t. 113, f. 1, a, b.

This species is not represented in our Amboina collections. The illustrations given by Rumphius of $Tacca\ litorea$, and of T. $phallifera\ t.\ 113$, $f.\ 1$, are both excellent representations of the

^{*} Retained name, Brussels Congress; Leontopetaloides Boehm. (1760) is older.

common and well-known Tacca pinnatifida Forst. The species was confused by Rumphius with Amorphophallus campanulatus Blume (see p. 127), Tacca phallifera Rumph. being made up of Tacca pinnatifida Forst. with the inflorescence of Amorphophallus campanulatus Blume, which was described by Rumphius as Taccae fungus. Tacca sativa Rumph., l. c. 5: 324, is also apparently a mixture of Tacca pinnatifida Forst. and Amorphophallus campanulatus Blume, but the description for the most part and the figure are Amorphophallus, not Tacca. Tacca dubia Schultes was based wholly on Tacca phallifera Rumph., excluding Taccae fungus and t. 113, f. 2, and is manifestly nothing but Tacca pinnatifida Forst. Forster apparently took his generic name from Rumphius, and in the original publication of the species he cites both Tacca sativa Rumph., t. 112, and Tacca litorea Rumph., t. 114, as synonyms. The type, however, was a Polynesian specimen.

TACCA PALMATA Blume Enum. Pl. Jav. 1 (1827) 83.

Tacca montana Schultes Syst. 7¹ (1829) 168.

Tacca rumphii Schauer in Nov. Act. Acad. Nat. Cur. 19 (1843) Suppl. 1: 442.

Tacca montana Rumph. Herb. Amb. 5: 329, t. 115.

This species is not represented in our Amboina collections. I consider that both forms described by Rumphius—I minor and II major—are referable here. The reduction was first made by Blume. Schultes merely substituted Rumphius's name for that proposed by Blume, reducing Tacca palmata Blume as a synonym. Tacca rumphii Schauer was based on Luzon specimens, manifestly the same as Tacca palmata Blume, with the addition of a reference to Tacca montana Rumph. Herb. Amb. 5: 329, t. 115.

DIOSCOREACEAE

DIOSCOREA Linnaeus

Rumphius described and figured a number of forms and species of *Dioscorea*, under the general name *Ubium*, which have been in part more or less misunderstood by subsequent authors. But two species are represented in our Amboina collections. These are both common and well-known species, so that the material available for study hardly assists in clearing up species of doubtful status so far as those based wholly or partly on Rumphius's descriptions and figures are concerned.*

^{*}Prain and Burkill. A synopsis of the Dioscoreas of the Old World, Africa excluded, with descriptions of new species and of varieties. *Journ.* As. Soc. Beng. II 10 (1914) 1-41.

DIOSCOREA BULBIFERA Linn. Sp. Pl. (1753) 1033.

Ubium pomiferum Rumph. Herb. Amb. 5: 354, t. 124.

This species is not represented in our Amboina collections. The figure, however, unmistakably represents *Dioscorea bulbifera* Linn. The reduction was first made by Linnaeus, in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1294, which has been followed by all authors. Ubium pomiferum silvestre Rumph., l. c. 354, is probably merely a form of the same species. Mr. Burkill notes that the wild form mentioned by Rumphius is in all probability *Dioscorea bulbifera* Linn. var. vera Prain and Burkill, and that the cultivated forms may include var. sativa Prain and Burkill and var. suavior Prain and Burkill.

DIOSCOREA ALATA Linn. Sp. Pl. (1753) 1033.

Ubium vulgare Rumph. Herb. Amb. 5: 346, t. 120.
Ubium digitatum Rumph. Herb. Amb. 5: 350, t. 121.
Ubium anguinum Rumph. Herb. Amb. 5: 351, t. 122.
Ubium ovale Rumph. Herb. Amb. 5: 356, t. 125.
Ubium draconum Rumph. Herb. Amb. 5: 351, t. 122, f. D, E.
Ubium anniversarium Rumph. Herb. Amb. 5: 353, t. 123.
Inhame St. Thome Rumph. Herb. Amb. 5: 355.

This commonly cultivated yam is not represented in our Amboina collections. However, I have little doubt that the six forms figured by Rumphius as Ubium vulgare, U. digitatum, U. anguinum, U. ovale, U. draconum, and U. anniversarium are all referable to Dioscorea alata Linn., including the several forms described under the first, second, and fourth. The species is enormously variable in the shape, color, and size of its subterranean parts, but is apparently fairly uniform in its vegetative and floral characters. The first three were originally and erroneously reduced by Linnaeus to Dioscorea oppositifolia Linn., in Stickman Herb. Amb. (1754) 22, 23, Amoen. Acad. 4 (1759) 131, but later authors have generally cited them as synonyms of Dioscorea alata Linn., where they properly belong. Ubium ovale Rumph. has been cited by some authors as a synonym of Dioscorea bulbifera Linn., but from the figure and description it is apparently merely the bulbil-bearing form of Dioscorea alata Linn. Ubium anniversarium Rumph. has been quoted by Henschel, Hasskarl, Kunth, and Miguel as a possible synonym of Dioscorea spiculata Blume, but Mr. I. H. Burkill has called my attention to the fact that it is the same form as the curious race of *Dioscorea alata* figured by him in Gard. Bull. Straits Settl. 1 (1915) 301, figs. 2-6, (1917) 393, pl. 5, 6; and in the Philip. Agr. and Forester 3 (1915) 207, plate 2, figs. 12, 14, 18.

In a recent letter to me Mr. Burkill states:

Of the Philippine Dioscorea alata I have in Singapore in a few races the tuberous roots do not respond to geotropism in the normal way, but ascend to the surface of the soil where conditions are apt to kill them. If one continues to protect them by covering them with earth they continue to grow and may become greatly elongated. The drawings of the yams on page 30 of Gardens' Bulletin were made at a time when I had not discovered how to earth them up. If you will examine the figure of Rumphius's Ubium anguinum you will note that what I take to be the same race is represented. I believe that this type of yam arose and was propagated by planting it in the midden at the back door and that the yams continued to grow upward with the accumulation of rubbish.

Mr. Burkill calls my attention to the fact that *Inhame St. Thome* of Piso is *Dioscorea alata* Linn., and that Rumphius was wrong in ascribing it to his *Ubium pomiferum*.

DIOSCOREA ESCULENTA (Lour.) Burkill in Gard. Bull. Straits Settl. 1 (1917) 396.

Oncus esculentus Lour. Fl. Cochinch. (1790) 194.

Dioscorea combilium Ham. in Wall. Cat. (1832) no. 5103A.

Dioscorea fasciculata Roxb. Hort. Beng. (1814) 72, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 801.

Dioscorea tiliaefolia Kunth Enum. 5 (1840) 401.

Combilium Rumph. Herb. Amb. 5: 357, t. 126.

This species is not represented in our Amboina collections. The figure, however, unmistakably represents the form commonly named Dioscorea tiliaefolia Kunth, but for which Prain and Burkill have recently adopted the name Dioscorea aculeata Linn. Sir David Prain, however, has discovered that Dioscorea aculeata Linn. is the valid name for D. wallichii Hook. f. and that Oncus esculentus Lour. supplies the oldest valid name for the species under discussion. Linnaeus originally reduced Combilium to Dioscorea aculeata Linn., in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1293. Mr. Burkill, who has called my attention to the necessary change in the specific name of this species, considers that Combilium is referable here with the possible exception of Combilium rubrum, the status of which is uncertain, and C. tsjampadaha, which is described as if a different species.

DIOSCOREA PENTAPHYLLA Linn. Sp. Pl. (1753) 1032.

Ubium quinquefolium Rumph. Herb. Amb. 5: 359, t. 127.

This species is not represented in our Amboina collections. The figure probably represents the var. *malaica* Prain & Burkill,

in Journ. As. Soc. Beng. II 10 (1914) 23. The original reduction of Rumphius's plant was made by Linnaeus, in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1293, and has been accepted by most authors. The forms described as *album*, *rubrum*, and *fuscum* are probably but variants of the same species.

DIOSCOREA HISPIDA Dennst. Schlüssel Hort. Malabar. (1818) 33.

Dioscorea hirsuta Roth Nov. Pl. Sp. (1821) 370.

Dioscorea daemona Roxb. Hort. Beng. (1814) 72, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 805.

Dioscorea triphylla auctt., non Linn.

Ubium silvestre Rumph. Herb. Amb. 5: 361, t. 128.

Colot e Philippinis Rumph. 1. c. 364.

AMBOINA, Waë, $Robinson\ Pl.\ Rumph.\ Amb.\ 375$, November 26, 1913, in light forests, altitude about 5 meters, locally known as ondo.

Dioscorea triphylla Linn., Sp. Pl. (1754) 1032, typified by Rheede, Hort. Malabar. 7: 63, t. 33, is merely a form of Dioscorea pentaphylla Linn. and must be considered as a synonym of that species. Prain and Burkill, however, propose to cite Dioscorea triphylla Linn. as published in Stickman, Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 131, thus typified by the Rumphian figure, and to retain Dioscorea triphylla Linn. as a valid species. This usage is inadmissible, and the specific name triphylla Linn. should be dropped. The oldest valid specific name appears to be Dioscorea hispida Dennst.

DIOSCOREA NUMMULARIA Lam. Encycl. 3 (1789) 231 (type!).

Dioscorea nummularifolia Henschel Vita Rumph. (1833) 183 (type!). Dioscorea glabra Koord. Meded. Lands Plantent. 19 (1898) 312.

Ubium nummularium frugiferum Rumph. Herb. Amb. 5: 444, t. 162.

Amboina, Negri lama and Soja, Robinson Pl. Rumph. Amb. 374, September 8, 1913, in thickets and on hillsides, altitude 20 to 375 meters, locally known as ubi utan.

Ubium nummularium Rumph. was originally and erroneously reduced by Linnaeus to Dioscorea villosa Linn., in Stickman Herb. Amb. (1754) 24, Syst. ed. 10 (1759) 1294; but in Amoen. Acad. 4 (1759) 133, it was erroneously referred to Smilax china Linn. by confusion with the preceding plate. It is the whole basis of Dioscorea nummularia Lam., the Rumphian figure and description being the type of that species. "Dioscorea nummularifolium Linn." as quoted by Henschel does not exist and is a manifest error, the intention being Dioscorea nummularia Lam. The species is well known, being widely distributed in the Philippines and the Moluccas and extending to the southeast as far as New Guinea and Prince of Wales Island.

DIOSCOREA sp. aff. D. NUMMULARIA Lam.

Ubium nummularium floriferum Rumph. Herb. Amb. 5: 445, t. 163.

This is not represented in our Amboina collections. Fl. Ind. Bat. 3 (1858) 572, cites this plate with the preceding one under Dioscorea nummularia Lam. Hasskarl, Neue Schlüssel (1866) 144, cites the Rumphian name, but not the plate. The figure presents a plant with oblong-ovate, prominently acuminate, 5-nerved leaves, which are rounded at the base, in aspect somewhat resembling some forms placed under Dioscorea nummularia Lam., but with the stems prominently spiny. I have a single Philippine specimen, Wenzel 1120 from Levte, that Burkill has identified as a form of Dioscorea nummularia Lam., which has spiny stems, but otherwise all the material of typical Dioscorea nummularia Lam. that I have seen is entirely unarmed. In aspect the two forms figured by Rumphius are very distinct, but the differences may be more apparent than real. Possibly the differences in the presence or absence of spines on the stems may be due to the fact that the figure of Ubium nummularium frugiferum presents only the upper part of the plant, while that of Ubium nummularium floriferum presents also the lower part of the plant, the upper part being unarmed. Regarding this form Mr. Burkill writes as follows:

Figure 163 is unrecognizable. It may be a very badly drawn Dioscorea of the D. nummularia alliance. The type of the inflorescence, the opposite leaves, and the characters of the underground parts all permit of this view, in which case we need not suppose that the foliage is that of a Stemona, but that the artist was very careless in making the drawing. Indeed the foliage looks as if it were withered when the drawing was made.

MUSACEAE

MUSA Linnaeus

MUSA PARADISIACA Linn. Sp. Pl. (1753) 1043.

Musa domestica Rumph. Herb. Amb. 5: 125, t. 60.

Musa uranoscopos Rumph. Herb. Amb. 5: 137, t. 61, f. 2.

Musa alphurica Rumph. Herb. Amb. 5: 138, t. 61, f. 3.

No attempt is here made to refer the numerous forms of the banana described by Rumphius to the various named varieties and forms of this species. Under *Musa domestica* Rumphius describes sixteen forms, four of which are figured; these for the most part are indicated by their native names. Rumphius described as distinct "species" *Musa uranoscopos* and *M. alphurica*, the former being reduced by Warburg to subsp. *troglodytarum* (Linn.) Baker, and the latter to subsp. *sapientum* (Linn.) O. Kuntze; *Musa troglodytarum* Linn., Sp. Pl. ed. 2 (1763)

1478, is typified by *Musa uranoscopos* Rumph. Herb. Amb. 5:137, t. 61, f. 2. From data and material at present available no satisfactory arrangement of the various forms of the cultivated and semicultivated bananas is possible, and the definite characters of the numerous species, subspecies, varieties, and forms can be determined only by a critical study of ample living material. No bananas are represented in our Amboina collections.

MUSA TEXTILIS Née in Ann. Cienc. Nat. 4 (1801) 123.

Musa silvestris mindanauensis Rumph. Herb. Amb. 5: 139.

This was described from Mindanao and Sangir material and is manifestly a form of the abacá plant. It is certain that *Musa textilis* Née includes a number of distinct forms or varieties, and perhaps a critical study of living material will show that some of the forms are worthy of specific rank.

MUSA TEXTILIS Née var. AMBOINENSIS Warb. in Engl. Pflanzenreich 1 (1900) 19.

Musa amboinensis Miq. Fl. Ind. Bat. 3 (1858) 588 (type!). Musa silvestris amboinensis Rumph. Herb. Amb. 5: 139.

The status of this Amboina form is uncertain, and it may prove to be specifically distinct from *Musa textilis* Née.

MUSA ACUMINATA Colla in Mém. Acad. Torin. 25 (1820) 338 (Mém. Gen. Musa 66).

Musa rumphiana Kurz in Journ. Agric. Hort. Soc. India II 5 (1878) 164.

Musa simiarum Miq. Fl. Ind. Bat. 3 (1858) 589.

Musa simiarum Rumph. Herb. Amb. 6: 138, t. 61, f. 1.

This sylvan species, briefly described by Rumphius, is probably a valid one, as considered by Warburg, in Engl. Pflanzenreich 1 (1900) 21, under the name *Musa acuminata* Colla. It has been referred by various authors to *Musa seminifera* Lour., *M. discolor* Horan., and *M. paradisiaca* Linn. var., but these reductions are certainly erroneous.

HELICONIA * Linnaeus

(BY TH. VALETON)

HELICONIA BIHAI Linn. Mant. 2 (1771) 211.

Musa bihai Linn. Sp. Pl. (1753) 1043.

Heliconia buccinata Roxb. Hort. Beng. (1814) 19 (type!).

Heliconiopsis amboinensis Miq. Fl. Ind. Bat. 3 (1858) 590.

Folium mensarium album Rumph. Herb. Amb. 5: 142, t. 62, f. 2 (sphalm. 1 in explic. p. 143).

This species, a native of tropical America, must have been

^{*} Retained name, Vienna Code; Bihai Adans. (1763) is older.

introduced into Amboina at a comparatively early date, probably by the Portuguese colonists. In literature Folium buccinatum, figured on the same plate, is confused with Folium mensarium. The reduction to Musa bihai Linn. was made by Burman f., Fl. Ind. (1768) 218, and to Heliconia bihai Linn. by Linnaeus, Mant. 2 (1771) 211. The confusion between Folium mensarium and Folium buccinatum was apparently occasioned by Burman in writing the explanation of the plate, who reversed the names and figures. The latter is Cominsia gigantea (Scheff.) K. Sch. (see p. 167).

The status of all the forms described in this chapter is now rather clear. Folium buccinatum asperum Rumph., Herb. Amb. 5: t. 62, f. 1, is Cominsia gigantea (Scheff.) K. Sch.; the figure has been confused with fig. 2, Heliconia bihai Linn. Folium mensarium nigrum is, apparently, merely a variant of the preceding. Folium mensarium rubrum is a species of Cominsia, undescribed under the binomial system (see p. 168). Folium buccinatum album is Phacelophrynium robinsonii Val.

ZINGIBERACEAE

(BY TH. VALETON)

ZINGIBER Adanson

ZINGIBER OFFICINALE Rosc. in Trans. Linn. Soc. 7 (1807) 348.

Amomum zingiber Linn. Sp. Pl. (1753) 1.

Zingiber majus album Rumph. Herb. Amb. 5: 156, t. 66, f. 1.

Linnaeus made the first reduction of the Rumphian species to Amomum zingiber Linn., in Stickman Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 129, Sp. Pl. ed. 2 (1762) 1, which, as Zingiber officinale Rosc., is manifestly the correct disposition of it. The form described by Rumphius as Zingiber majus rubrum is probably merely a variant of the common ginger, Zingiber officinale Rosc.

ZINGIBER OFFICINALE Rosc. var. MINOR Val. var. nov.

Zingiber minus sive gramineum Rumph. Herb. Amb. 5: 161, t. 66, f. 2.

Dimensione minore et proprietatibus rhizomatis insignis. Floribus paullum majoribus, labello orbiculari, lobis lateralibus late rotundato-ovatis basi subcordatis a genuina distinguenda.

This variety is very commonly cultivated in western Java and occasionally produces flowers, although botanically it is quite unknown. It is easily identified by the native name *sunti*, mentioned by Rumphius and still in use, as well as by the

description. Blume was wide of the mark in reducing it to Zingiber gramineum Blume, Enum. Pl. Jav. (1827) 45. The latter is a rather common wild species of Java and Cochin-China and is never cultivated.

ZINGIBER ZERUMBET (Linn.) Smith Exot. Bot. 2 (1804) 103, t. 112.

Amonum zerumbet Linn. Sp. Pl. (1753) 1.

Lampujum majus domesticum Rumph. Herb. Amb. 5: 148, t. 64, f. 1. Amboina, Toelehoe, Boerlage 247 in herb. bog., July 16, 1900.

This reduction of Lampujum majus domesticum was first made by Linnaeus, in Stickman Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 129, Syst. ed. 10 (1759) 842, Sp. Pl. ed. 2 (1762) 1, and is manifestly the correct disposition of it. Rumphius distinguished a cultivated and a wild form, but he found no difference between them, only that the latter flowered more abundantly. Blume did not think this was the genuine Z. zerumbet and reduced it to Z. amaricans Bl.; but his notions about true Z. zerumbet are not very clear, and specimens from Amboina (Boerlage 247) in the Buitenzorg herbarium seem to agree with the type. Zingiber marginatum (Roxb.?) Bl., which is quoted here by some authors, was based partly on Lampujum silvestre minus Rumph., Herb. Amb. 5: t. 64, which is Globba marantina L., partly on an abnormal form of Z. zerumbet, with a central inflorescence instead of a lateral one, occurring sometimes in Java.* Zingiber montanum Link was based on Amomum montanum Koenig, in Retz. Obs. 3 (1779) 51, quoted here by Koenig, l. c., but Ridley, Fl. Mal. Penins. 2 (1907) 28, thinks it represents Z. cassumunar Roxb.

ZINGIBER ZERUMBET (L.) Smith. var. AMARICANS Val.

Zingiber amaricans Bl. Enum. Pl. Jav. (1827) 43.

Lampujum minus Rumph. Herb. Amb. 5: 148.

This reduction is based on Rumphius's assertion that this form was a native of Java, and thence brought to Amboina with the Malayan name lampujum ketjil or wangi. The latter is still very commonly used in Java for a form that is botanically not to be distinguished from lampujum pait, described by Blume as Zingiber amaricans. Blume's short description agrees wholly with the specimens I have examined.

ZINGIBER CASSUMUNAR Roxb. in As. Research. 11 (1810) 347, t. 5. Bangleum Rumph. Herb. Amb. 5: 154, t. 65, f. 2.

This reduction of Bangleum was apparently first made by

^{*} See van Zijp, Recueil Trav. Bot. Néerlandais 12 (1915) 346, t. 3.

Blume, Enum. Pl. Jav. (1827) 42, which is manifestly the correct disposition of it. The figure represents a sterile specimen only.

ALPINIA Linnaeus

ALPINIA GALANGA (Linn.) Sw. Obs. Bot. (1791) 8.

Maranta galanga Linn. Sp. Pl. ed. 2 (1763) 3 (type!).

Galanga major Rumph. Herb. Amb. 5: 143, t. 63.

This species is not represented in Robinson's collection. Galanga major Rumph. is the whole basis of Maranta galanga Linn., which typifies Alpinia galanga Sw.; the plate is very generally cited in botanical literature under Alpinia galanga (Linn.) Sw. All the specimens I have seen from Amboina and Celebes (Boerlage, Teysmann, Riedel, Koorders) differ from the cultivated form in having pubescent leaves and inflorescences. They probably represent the same form as the wild Javan one, Alpinia pyramidata Blume, considered by K. Schumann as a variety of Alpinia galanga Sw. Galanga minor Rumph., Herb. Amb. 5: 144, t. 63, d, may represent a different species.

ALPINIA GIGANTEA Blume Enum. Pl. Jav. (1827) 59, non aliorum.

Alpinia eremochlamys K. Sch. ex parte (specim. auth. in Herb. Bog.) in Engl. Pflanzenreich 20 (1904) 362, excl. descr. et fig. 40, 0, citatis. Globba silvestris minor Rumph. Herb. Amb. 6: 141, excl. t. 63 citata (t. 62 et 63 ad Alpinia nutans spectant).

AMBOINA, Hoetoemoeri road, Robinson Pl. Rumph. Amb. 141 (staminate), on a fern-covered hillside, altitude about 250 meters, the whole plant about 6 meters high, locally known as geloba gardamu; Soja, Robinson Pl. Rumph. Amb. 143 (pistillate) on grassy slopes, altitude 375 meters, plant about 8 meters high. Collected also in Amboina by Teysmann at Hoetoemoeri, and by Boerlage, No. 407, at Latoea, the latter recording the local names gardamoe oetan and anipa waccang. The Celebes form mentioned by Rumphius is probably a related but distinct species.

K. Schumann, in Engl. Pflanzenreich 20 (1904) 355, regards the name Alpinia gigantea Blume as invalid on the basis: "nomen speciei mixtae melius deletur quam ulterius conservatur." Now Blume was wrong in referring Globba silvestris major to his species, but Alpinia gigantea Blume was based on a rather poor specimen and Reinwardt's manuscript, and hence it is not to be interpreted by the Rumphian synonym quoted by him. Robinson referred his No. 141 to the form figured by Rumphius, t. 62, as Blume did, yet considering it as Globba silvestris minor. It is improbable that Rumphius would have depicted a fruiting specimen when he professes that this kind never bears fruit, while the figures distinctly show the withered bracts, which

occur in Alpinia nutans and are very distinct in t. 63, fig. B. which I think is merely an almost life-sized branchlet of the form figured on the plate. According to Rumphius the racemes of Globba silvestris minor differ from Globba silvestris major in being longer, sterile, and without bracts, in all of which characters Robinson 141 agrees; the specimen presents only staminate flowers, with no vestiges of a gynaecium and no bracts. The specimen also agrees with Alpinia gigantea Blume in having very large pubescent leaves, so that Blume's species was not a "species mixta" at all and should be reinstated. The pistillate racemes of this plant, unknown to Rumphius, were also collected by Robinson, No. 143, who did not, however, recognize that this form belonged with the one represented by his 141. the Buitenzorg herbarium there are numerous specimens collected by Boerlage and by Teysmann presenting both pistillate and staminate flowers.

ALPINIA NUTANS (Linn.) Rosc. in Smith Exot. Bot. 2 (1805) quoad syn. Linn., excl. t. 160 et descr. quae est A. speciosa K. Sch.

Globba nutans Linn. Mant. 2 (1771) 170 (type!).

Alpinia papuana K. Schum. in Engl. Pflanzenreich 20 (1904) 355, p. p., quoad specim. Moluccana.

Alpinia moluccana Gagnep. in Bull. Soc. Bot. France 48 (1902) 90. Alpinia eubractea Val. (non K. Schum.) Ic. Bogor. 3 (1909) t. 300.

Alpinia gigantea Val. (non Blume) Nova Guinea 8 (1913) 943.

Globba silvestris major Rumph. Herb. Amb. 6: 140, t. 62, 63 (in explicatione tab., t. 63, sphalmate pro Globba silvestris minor distincta habetur).

AMBOINA, Lateri, Robinson Pl. Rumph. Amb. 142, September 5, 1913, in forests, altitude about 275 meters, locally known as geloba merah. Also collected by Teysmann in the same locality, and by Boerlage 83 p. p.

This species is widely distributed in the Eastern Archipelago and has been described under various names, but Globba nutans Linn., the name-bringing synonym of Alpinia nutans Rosc. was based wholly on Globba silvestris major Rumph., Alpinia nutans Rosc. thus being the oldest name for the species. The younger Linnaeus, Suppl. (1781) 79, followed by Giseke, Prael. Ord. Nat. Pl. (1792) 251, erroneously referred both of the Rumphian illustrations to Renealmia exaltata Linn. f., but the plant actually described under this name was from South America and is entirely different from the Moluccan one. By some authors, Murray, Syst. (1774) 67, and Richter, Codex Bot. Linn. (1840) 42, the figures are erroneously cited as t. 12 and t. 13, instead of t. 62 and t. 63. Alpinia nutans Rosc., as actually described and figured, is Alpinia speciosa (Wendl.) K. Schum. Alpinia nutans K. Schum., non Rosc. is Alpinia oceanica Burkill. Al-

pinia moluccana Gagnep, is exactly identical with Alpinia nutans as here interpreted. Alpinia papuana Scheff., in Ann. Jard. Bot. Buitenz. 1 (1876) 56 (type in Herb. Hort. Bog.), has a different calvx and much smaller flowers and inflorescences than the present species. Alpinia eubractea K. Sch. (non Val.) from Celebes (Sarasin 846), differs conspicuously in its long, narrow, truncate bracteoles.* Alpinia colossea K. Schum. is the same as A. papuana Scheff. Alpinia gigantea Blume is definitely referred by K. Schumann to Scheffer's species, although at the same time he rebukes Blume for quoting Rumphius's t. 62 instead of t. 63 and for describing the leaves as pubescent instead of glabrous. Following K. Schumann's interpretation of Blume's species, I adopted the latter's specific name for the wrong species (Nova Guinea l. c.). If Blume had meant this species, he surely would have quoted t. 63 and would also have mentioned the striking bracts (which are shown, but much less conspicuously, in t. 62), and he would have described the leaves as glabrous. Blume's description certainly applies to a different species; see above. As already noted, Globba nutans Linn. supplies the oldest specific name for this species, but which was rejected by K. Schumann because Linnaeus quoted both t. 62 and t. 63, which he, K. Schumann, considered to represent distinct species; yet in this K. Schumann was wrong and Linnaeus was right, as both figures manifestly apply to but a single species.

ALPINIA MALACCENSIS Rosc. in Trans. Linn. Soc. 8 (1807) 330.

Galanga malaccensis Rumph. Herb. Amb. 5: 176, t. 71, f. 1 (incl. Bangle malacca).

The Rumphian reference cited above was placed by Burman f., Fl. Ind. (1768) 2, under Maranta malaccensis Burm. f., which is the name-bringing synonym of Alpinia malaccensis Rosc. Roxburgh, Asiat. Res. 11 (1810) 353, referred to Alpinia malaccensis material from Chittagong, and his interpretation has been accepted by most authors. Blume, Enum. (1827) 59, without mention of Roxburgh's description, interpreted the common Javan form as Burman's species, and his reduction and diagnosis have been overlooked by all authors, including K. Schumann. Ridley, who collected the Javan form in Malacca denied that it is identical with Roxburgh's interpretation of Alpinia malaccensis and redescribed it as Alpinia nobilis Ridl., in Journ. Roy. As. Soc. Straits Branch 32 (1899) 169, without mention of Alpinia malaccensis Rosc. It seems to me more probable that Blume's interpretation of the Rumphian species is

^{*} See K. Schumann in Engl. Pflanzenreich 20 (1904) t. 41, f. A.

the correct one as Rumphius states that the species occurred most commonly in Java and in Malacca; it is more probable that an Amboina species would also occur in Java than in Chittagong. The Rumphian description agrees equally well with both forms, and as this particular one has not been collected in Amboina since Rumphius's time, I cannot determine, with certainty, whether or not Alpinia malaccensis Rosc. is the same as A. nobilis Ridl. Roscoe's species will have to remain among those of uncertain status until Amboina specimens are available for study.

ALPINIA UVIFORMIS (Linn.) Horan. Monogr. (1862) 35 (type!).

Globba uviformis Linn. Mant. 2 (1771) 171 (type!).

Globba uviformis Rumph. Herb. Amb. 6: 138, t. 59, f. 2.

A species of doubtful status, known only from Rumphius's figure and description. K. Schumann places it in the section Cylindrostachys. However, it has every appearance of a Plagiostachys, and I suspect that it really belongs in this genus, not in Alpinia. The figure and the description are rather good. It differs from all known species of Plagiostachys, this genus extending from Malacca to Banka, Borneo, and the Philippines, in its much longer, white flowers and tomentose fruits. It is singular that this species, reported by Rumphius from Amboina and Celebes and stated by him to be so common in southern Celebes that the Buginese use it for thatching, has not been collected by any modern botanist or collector.

ALPINIA sp.

Globba silvestris pada kanka Rumph. Herb. Amb. 6: 142.

This was described from specimens from eastern Celebes, there known as padakanka. The characters indicated—terminal raceme, red flowers, and small globose fruits—point to Alpinia. Hasskarl thought that it might be near Alpinia pyramidata Blume.

RIEDELIA Oliver

RIEDELIA LANATA (Scheff.) K. Schum. msc. in Herb. Bog.; Valeton in Ic. Bogor. 4 (1913) t. 373, Nova Guinea 8:961.

Hedychium lanatum Scheff. in Ann. Jard. Bot. Buitenz. 1 (1876) 57.
Riedelia curviflora Oliv. in Hook. Ic. Pl. 15 (1883) t. 1419; K. Sch. in Engl. Pflanzenreich 20 (1904) 374 p. p.

Thylacophora pogonocheilus Ridl. in Trans. Linn. Soc. Bot. 9 (1916) 210, t. 5, f. 74, t. 6, f. 75-82.

· ? Globba lawassi Malacca Rumph. Herb. Amb. 6: 139.

Amboina, Lateri, Robinson Pl. Rumph. Amb. 543, in light forests, altitude about 35 meters, locally known as globba baubau.

This species has not been previously collected in Amboina,

although it is well known in Boeroe (Riedel, Teysmann) and occurs in New Guinea (Teysmann, Versteeg). I reduce to it Globba lawassi Malacca of Rumphius, because the fruits agree with Rumphius's description, while the seeds have a marked flavor of cardamon.

AMOMUM sensu Benthamiano *

AMOMUM CARDAMOMUM Willd. (not Linn. which is Elettaria cardamomum) Sp. Pl. 1 (1797) 8; Roxb. Pl. Coromandel 3: 22, t. 227, Fl. Ind. ed. 2, 1 (1832) 37; K. Schum. in Engl. Pflanzenreich 20 (1904) 238 (Amomum cardamon).

Cardamomum minus Rumph. Herb. Amb. 5:152, t. 65, f. 1.

This was reduced by Linnaeus to Amonum cardamonum Linn., in Stickman Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 129, but is entirely different from the Linnaen species as originally published in 1753, which is *Elettaria cardamonum* Maton. It is not represented by botanical specimens from Amboina, but occurs in Java, cultivated and spontaneous, and in Sumatra.

In the same chapter Rumphius briefly mentions two other species, the fruits of which were considered as kinds of cardamon. He distinguishes in all three kinds of cardamon, none of which is a native of Amboina, as follows:

Cardamom majus "the round Cardamom of Java."

This is, according to Pereira, who compared fruits known by this name with authentic specimens in Kew, doubtless $Amomum\ maximum\ Roxb.$ Fl. Ind. 1 (1820) 41, a native of Java [Pereira Materia medica 2 (1849) 106]. Cardamom medium sive minus= $Amomum\ cardamomum\ Willd.$

This is the only one that was cultivated, though with little success, in Amboina.

Cardamom verum fructibus minimis trigonis= $Elettaria\ cardamomum$ Maton.

AMOMUM ROSEUM (Teysm. & Binn.) Benth. & Hook. f. ex Jackson Index Kewensis (1895) 108, non Roxb.

Donacodes rosea Teysm. & Binn. Cat. Hort. Bogor. (1866) 58.

Amomum truncatum Gagnep. in Bull. Soc. Bot. Fr. 51 (1903) 164.

Globba crispa II rubra Rumph. Herb. Amb. 6: 137, t. 60, f. B, C, D, t. 61, f. 2.

AMBOINA, Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 140, August 23, 1913, locally known as gelobba; Teysmann. Celebes, Koorders 592c, 19651\u03b3.

Loureiro, Fl. Cochinch. (1790) 4, referred this to Amomum villosum Lour., that is, Globba crispa Rumph. t. 61, but mani-

^{*} This genus in its widest sense contains species placed by different authors under *Elettaria*, *Geanthus*, *Donacodes*, *Phaeomeria*, *Hornstedtia*, and *Amomum*.

festly the Amboina plant is entirely different from the Cochin-China one that Loureiro described. In this reduction Loureiro was followed by numerous authors. Hasskarl, Neue Schlüssel (1866) 174, thought that it might be Amomum aculeatum Roxb., which can scarcely be the correct disposition of it. Donacodes rosea Teysm. & Binn. was based on Amboina specimens, and our material agrees closely with the figure given by K. Schumann in Engler's Pflanzenreich 20 (1904) 230. The Celebes specimens described by Gagnepain as Amomum truncatum Gagnep. are certainly conspecific with the Amboina ones, although they have glabrous leaves, while the Amboina specimens have long-ciliate leaves.

AMOMUM ACRE Val. sp. nov.

Globba acris Rumph. Herb. Amb. 6: 140.

Flores? Ovarium ellipticum sericeum sublaeve. florescentia fructifera racemosa simplex elongata densiflora. Rachis valida 10 ad 12 mm crassa. Bracteae persistentes coriaceae oblongae versus basin attenuatae, inferiores 30 ad 35 mm longae 8 ad 10 mm latae valde scariosae versus apicem racemi sensim minores. Bracteolae binae approximatae prope basin pedicelli intervallo brevi insertae ovatae acutae concavae dorso leviter carinatae, valde coriaceae sericeo-tomentosae, 12 ad 15 mm longae 6 ad 8 latae. Pedicelli validi 15 ad 20 mm longi, 2 ad 3 mm crassi bracteis breviores, sericei. Fructus late ellipsoidei (30×20 mm) utrinque attenuati, apice breviter rostrati et in calycem coriaceum persistentem ad basin usque trifidum, segmentis 10 ad 15 mm longis apice spinulosis, excurrentes, pericarpio carnoso-coriaceo spinis compressis e basi lata acute trigonis 1 ad 2 mm altis, verticaliter subseriatis haud densis obsesso, triloculares septis tenuibus seminibus numerosis arillatis conglutinatis.

This species is very closely allied to Amomum roseum (T. & B.) Benth. & Hook. f. (see p. 157). The infructescence of the latter resembles very much that of Amomum acre, but is smaller in all parts except the bracts, which are longer, not scariose, and end in a spinous point. Also the spines of the fruit are much denser near the apex of the fruit. This species is represented in the Buitenzorg herbarium by fruiting specimens from Macassar, Celebes, where the plant still bears the Malay name panas, as cited by Rumphius. It seems to be near Amomum roseum Benth. & Hook. f. Hasskarl, Neue Schlüssel (1866) 175, thought that it might be Amomum uliginosum Koenig; this is manifestly an erroneous reduction of it.

? AMOMUM ACULEATUM Roxb. Asiat. Research. 11 (1810) 344, t. 6; Blume Enum. Pl. Jav. (1827) 50; K. Sch. in Engl. Pflanzenreich 20 (1904) 240.

Amonum hatuanum Naves Novis. App. Fl. Filip. (1880) 224 (type!). ? Globba hatuana Rumph. Herb. Amb. 6: 138.

Amomum aculeatum Roxb. is common in Java, where it grows both wild and cultivated, and I think that it occurs in various forms or varieties throughout the Eastern Archipelago. Among the Papuan forms, which I have described as varieties of this species, Amomum gymnocarpum Val., Nova Guinea 8: 926, apparently agrees with Rumphius's description. Rumphius's description is the whole basis of Amomum hatuanum Naves, a name not listed in Index Kewensis.

Globba longa minor Rumph., Herb. Amb. 6: 136, a native of Java, is probably *Hornstedtia minor* (Blume) K. Sch. (*Elettaria minor* Blume).

? AMOMUM MAGNIFICUM (Rosc.) Benth. & Hook. f. Gen. Pl. 3 (1883) 644.

Alpinia magnifica Rosc. Monandr. Pl. (1828) t. 75.

Phaeomeria magnifica Lindl. Introd. Nat. Syst. ed. 2 (1835) 466.

Nicolaia imperialis Horan. Monogr. (1862) 32, t. 1.

Hornstedtia imperialis Ridl, in Journ. Roy. As. Soc. Str. Branch 32 (1899) 148.

Nicolaia magnifica K. Schum. in Engl. Bot. Jahrb. 27 (1899) 303; Val. in Bull. Inst. Bot. Buitenz. 20 (1904) 35.

Globba silvestris sulica Rumph. Herb. Amb. 6: 141.

Rumphius's description applies unmistakably to *Nicolaia*, and Hasskarl, Neue Schlüssel (1866) 175, considered it to be *Nicolaia speciosa* Horan. or an allied species. I have placed it under *Amomum magnificum* with doubt, because I suppose the Celebes specimens collected by Sarasin, cited by K. Schumann under *Nicolaia magnifica* K. Schum., to represent Rumphius's species, which was from Celebes. Whether the form Rumphius described is *Nicolaia magnifica* K. Schum., *N. hemisphaerica* Horan., or *N. speciosa* Horan., I do not venture definitely to decide. I consider *N. speciosa* Horan. to be distinct from *N. magnifica* K. Schum. on account of the color of the labellum.

AMOMUM RUMPHII Smith in Rees Cyclop. 39 (1819) no. 15 (type!).

Elettaria musacea Horan. Monogr. (1862) 31 (type!).

Donacodes incarnata T. & B. Cat. Hort. Bogor. (1866) 380.

Hornstedtia elongata K. Schum. in Engl. Pflanzenreich 20 (1904)
192 p. p. excl. descriptione, quae refert partim ad Amonum maximum Bl.!, partim ad Hornstedtiae spec. incertam.

Globba longa s. vulgaris Rumph. Herb. Amb. 6: 134, t. 60.

AMBOINA, Hatiwe and Batoe gadjah, Robinson Pl. Rumph. Amb. 144,

August and September, 1913, on wooded hillsides and river banks, altitude 20 to 250 meters; *Teysmann*. Cultivated in the botanic garden at Buitenzorg, from Amboina, under the native name *geloba*.

A critical examination of two authentic specimens in the Buitenzorg herbarium labelled by K. Schumann "Bearbeitet für das Pflanzenreich," both from plants cultivated in the botanic garden, shows them to be different from each other. One of them is wrongly labelled "Donacodes minor" and is apparently D. elongata T. & B. The other is the type specimen of D. incarnata T. & B., a native of Amboina; this is identical with Robinson's Amboina material and is easily distinguished from D. elongata T. & B. by its densely tomentose ligule. Donacodes elongata T. & B. and D. incarnata T. & B. are nomina nuda, and the latter is apparently identical with Globba longa Rumph. Older names are Amomum rumphii Smith and Elettaria musacea Horan., both based on Rumphius. K. Schumann was wrong in referring Globba longa Rumph. to Amomum roseum (T. & B.) Benth. & Hook. f.

AMOMUM sp.

Globba crispa I viridis Rumph. Herb. Amb. 6: 137, t. 61, f. 1.

This Rumphian species has not been located, yet the description and figure are so good that it could not readily be overlooked had a plant presenting its characters appeared in modern collections from the Moluccas. Willdenow, Sp. Pl. 1 (1797) 8, after Koenig, placed the Rumphian species as a synonym of Amomum echinatum Willd. Willdenow's species was based on Koenig's Amomum 2 or Globba crispa, a native of Malacca; the latter has tubercled, not aculeate, fruits and a filiform rhizome and differs totally from Globba crispa Rumph. Amomum echinatum Baker, of Ceylon, described also by Trimen under this name, is still another quite different species, with copious curved spines. Loureiro, Fl. Cochinch. (1790) 4, referred Globba crispa Rumph. to Amomum villosum Lour., where it manifestly does not belong.

AMOMUM sp.

Globba silvestris subterranea Rumph. Herb. Amb. 6: 142.

Amomum hochreutineri Val., a species with white subterranean fruits, as described by Rumphius, occurs in the mountains of western Java. It is allied to Amomum hypoleucum Thw. and like the latter is characterized by the silvery lower surface of the leaves; it is assumed that Rumphius would have mentioned this character had he intended this species. Hasskarl thought that it might be near Amomum gracile Blume.

AMOMUM sp.?

Globba sekala Rumph. Herb. Amb. 6: 141.

This herb, a native of the eastern coast of Celebes, is said to resemble *Alpinia gigantea* in habit, but to be smaller and with reddish flowers issuing from the rhizome as in *Amomum roseum*. The species has not been found again so far as can be ascertained. It might be *Alpinia melichroa* K. Schum., in Engl. Pflanzenr. 20 (1904) 364, collected by Sarasin (*No. 871*) in Celebes. Nothing definite can be stated regarding its proper position.

HEDYCHIUM Koenig

HEDYCHIUM CHRYSOLEUCUM Hook. f. in Curtis's Bot. Mag. 76 (1850) t. 4516; K. Schum. in Engl. Pflanzenreich 20 (1904) 46.

Gandasulium Rumph. Herb. Amb. 5: 175, t. 69, f. 3.

AMBOINA, Robinson Pl. Rumph. Amb. 145, August, September, and October, 1913, from cultivated plants, locally known as gandasuli.

Gandasulium Rumph, was reduced by Koenig to Hedychium coronarium Koenig in the original description of that species, and this disposition of it has been accepted by all subsequent authors. It is not certain, however, that Gandasulium Rumph. is identical with Hedychium coronarium Koenig, which was based on Malacca specimens. Koenig's original description is not sufficiently detailed to show its exact status. If the Amboina material cited above really represents Gandasulium Rumph., as I suppose it does, it is certainly not the same as Hedychium coronarium as considered by Roscoe, Monandr. Pl. t. 51, and by K. Schumann, in Engl. Pflanzenreich 20 (1904) 44. It seems to me to agree perfectly with the figure of *Hedychium* chrysoleucum Hook. f. quoted above, the drawing having been made from specimens sent by Roxburgh; it is not impossible that Roxburgh's plants came originally from Amboina, although it seems not to be a native of Amboina. It occurs in Java only as a cultivated plant.

KAEMPFERIA Linnaeus

KAEMPFERIA GALANGA Linn. Sp. Pl. (1753) 2.

Soncorus Rumph. Herb. Amb. 5: 173, t. 69, f. 2.

Not represented in our Amboina collections. Linnaeus originally reduced *Soncorus* Rumph. to *Kaempferia galanga* Linn., in Stickman Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 129, Syst. ed. 10 (1759) 843, Sp. Pl. ed. 2 (1762) 3, which is

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apparently the correct disposition of it and one that has been accepted by all authors.

KAEMPFERIA PANDURATA Roxb. in As. Research. 11 (1810) 328, t. 2.

Gastrochilus panduratum Ridl. in Journ. As. Soc. Str. Branch 32 (1899) 114.

Zerumbed claviculatum Rumph. Herb. Amb. 5: 172, t. 69, f. 1.

Linnaeus originally reduced Zerumbed claviculatum Rumph. to Kaempferia rotunda Linn., in Stickman Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 129, which is manifestly an erroneous disposition of it. Roxburgh, Fl. Ind. 1 (1820) 18, placed it under Kaempferia pandurata Roxb., which was described from Sumatran specimens. This reduction has been accepted by Roemer and Schultes, Blume, Dietrich, Miquel, and Horaninow and is apparently the correct disposition of it.

GLOBBA Linnaeus

GLOBBA MARANTINA Linn. Mant. 2 (1771) 170.

Lampujum silvestre minus Rumph. Herb. Amb. 5: 150, t. 64, f. 2.

Amboina, Soja, Robinson Pl. Rumph. Amb. 145, August, 1913, along roadsides and on banks, altitude 5 to 400 meters, locally known as kuning utan.

Rumphius's figure is a very poor one, but it is certainly referable to *Globba marantina* Linn. This reduction seems first to have been made by Roemer and Schultes, Syst. Mant. 1 (1822) 46.

CURCUMA Willdenow

Rumphius described, in all, nine forms of Curcuma, of which he declares that the first three, considered in chapter sixteen, belong to the true Curcuma. In the following chapter he deals with a group of species, which he considered under the "generic" name Zerumbed, on account of the assertions of the natives, who deliberately distinguish these forms from the true Curcuma, or koenjit, uniting them under a proper group name, tommon. Rumphius confessed, however, that he himself was not able to find characters by which the two groups could be distinguished. However, if one compares the native names cited by Rumphius for the six species mentioned under Zerumbed, with those now used in Java, one is impressed by the fact that, with a single exception, all of them are applied to species belonging in the section Exantha; while the three species placed by Rumphius under the name Curcuma, all belong in the section Mesantha. The clue to Rumphius's enigma apparently lies in the fact that

he had not seen the flowers of most of the species, and hence did not know of the peculiar distinguishing character of the inflorescence. This may also explain why t. 68 was placed under Zerumbed, rather than under Curcuma, where it really belongs.

Of the six species enumerated in chapter seventeen, under Zerumbed, the first and second are discussed below; the third (album), fourth (giring), and sixth (manga), all cultivated in Java, are still undescribed under the binomial system; while the fifth (frigidum), as regards the name ties, but not the description, belongs to Curcuma viridiflora Roxb. Fl. Ind. 1 (1820) 34, a species of the section Mesantha. Roxburgh himself reduced the fourth species to Curcuma viridiflora Roxb., but that was evidently an error on his part.

CURCUMA LONGA (non Linn. quae est prob. C. aromatica Salisb., vide Hermann Hort. Acat. Lugd. Bot. Descr. (1687) 208, t. 209) Koenig in Retz. Obs. 3 (1783) 72, non aliorum.

Curcuma domestica minor (et major?) Rumph. Herb. Amb. 5: 164, t. 67.

Rumphius's description agrees exactly with our commonly cultivated curry plant, as do the Malay names cited by him, and the form that he described and figured is apparently identical with that described by Koenig as Curcuma longa. It is characterized by its central spike, white bracts, and orange rhizomes. In Java a tall form and a short form occur, but I cannot detect any notable differences between them. Curcuma longa Linn., Sp. Pl. (1753) 2, was based wholly on Curcuma radice longa Herm., which probably is the same as Curcuma aromatica Salisb. Linnaeus, however, reduced the Rumphian species, as figured, to Curcuma longa Linn., in Stickman Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 129, Syst. ed. 10 (1759) 843; while in the second edition of the Species Plantarum (1762) 3, he erroneously referred it to Curcuma rotunda Linn., which is supposed to be the same as Kaempferia pandurata Roxb.

CURCUMA PETIOLATA Roxb. Fl. Ind. 1 (1820) 37, sensu latissimo K. Schum. in Engl. Pflanzenreich 20 (1904) 102.

Curcuma agrestis Rumph. Herb. Amb. 5: 164.

This species, in the wide sense that it was interpreted by K. Schumann, was until recently known only from Pegu and Moulmein, but has been detected growing also in Java. Rumphius's description agrees so closely with that of Roxburgh, that I do not hesitate in reducing *Curcuma agrestis* Rumph. to C. petiolata Roxb.

CURCUMA ZEDOARIA (Berg.) Rosc. Monandr. Pl. (1828) t. 109.

Amomum zedoaria Berg. Mat. Med. (1788) 41.

Zerumbed majus Rumph. Herb. Amb. 5: 168, excl. t. 68 citata (quae prob. ad C. viridifloram Roxb. pertinet).

Zerumbed of Rumphius was first placed by Linnaeus under Curcuma rotunda Linn., in Stickman Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 129, Syst. ed. 10 (1759) 842, but is manifestly Curcuma zedoaria Rosc., where it was placed by Willdenow, with doubt (sub Amomum zedoaria Berg.), and by Roemer and Schultes. It has, by various authors, been placed under Costus arabicus Linn., Amomum latifolium Lam., Amomum zerumbeth Koenig, Renealmia exaltata Linn., and Curcuma zerumbet Roxb.

CURCUMA AERUGINOSA Roxb. Fl. Ind. 1 (1820) 27; Rosc. Monandr. Pl. (1828) t. 106.

Zerumbed nigrum Rumph. Herb. Amb. 5: 169.

This form occurs in Java, cultivated and wild, and, according to Roxburgh, in Burma. Roxburgh placed *Zerumbed nigrum* Rumph. under *Curcuma caesia* Roxb., but the Javan plant, which is certainly the same as the one that Rumphius described, agrees better with *Curcuma aeruginosa* Roxb.

COSTUS Linnaeus

COSTUS SPECIOSUS (non Smith) Blume Enum. (1827) 61, non Banksia speciosa Koenig.

Costus speciosus var. glabra K. Sch. in Engl. Pflanzenreich 20 (1904) 398.

Herba spiralis II laevis Rumph. Herb. Amb. 6: 143, t. 64, f. 2.

AMBOINA, Soja, Robinson Pl. Rumph. Amb. 147, August 14, 1913, in forests, altitude about 400 meters, flowers white, fruit red.

COSTUS SPECIOSUS Blume var. HIRSUTUS Blume Enum. (1827) 61; Val. in Nova Guinea 8: 982.

Costus speciosus var. lasiocalyx K. Sch. in Engl. Pflanzenreich 20 (1904) 398.

Costus speciosus var. argyrophyllus Ridl. in Herb. Kds., non Ridl. in Mat. Fl. Mal. Pen. 2 (1907) 24, which is C. sericea Blume.

Herba spiralis I hirsuta Rumph. Herb. Amb. 6: 143, t. 164, f. 1.

This has been collected in Amboina by Boerlage and is known from Java, Celebes, Key, and New Guinea. Koenig originally reduced *Herba spiralis* Rumph. to *Costus speciosus* Sm., in which he has been rather uncritically followed by all recent authors. The Malacca form, typical *Costus speciosus* Sm., which is commonly cultivated in Batavia, but which is not wild in the Archi-

pelago, has flowers four times as large as the Javan and Amboina forms, which again differ from each other. Besides *Costus speciosus* I think there are two other known species common in the Malayan region. One is *Costus sericeus* Blume (argyrophyllus Ridl.), the other the form represented by Rumphius's figure, which will probably need a distinctive specific name.

TAPEINOCHILUS Miquel

TAPEINOCHILUS ANANASSAE (Hassk.) K. Schum. in Engl. Bot. Jahrb. 27 (1899) 349; Engl. Pflanzenreich 20 (1904) 436.

Costus ? ananassae Hassk. in Abhandl. Naturf. Gesellsch. Halle 9 (1866) 335 (Neue Schlüssel 191) (type!).

Tapeinochilus pungens Miq. in Ann. Mus. Bot. Lugd. Bat. 4 (1868-69) 101, t. 4.

Tubu tubu Rumph. Herb. Amb. 7: 52, t. 22, f. 2.

The original description of the species proposed by Hasskarl was based entirely on Rumphius. The species was not published by Hasskarl under *Tapeinochilus* as indicated by K. Schumann, but under *Costus*. Neither of the names appears in Index Kewensis of in its supplements to date.

CANNACEAE

CANNA Linnaeus

CANNA INDICA Linn. Sp. Pl. (1753) 1.

Cannacorus Rumph. Herb. Amb. 5: 177, t. 71, f. 2.

AMBOINA, Roemah tiga and about the town of Amboina, Robinson Pl. Rumph. Amb. 410, August 15, 1913, along river banks, in sago swamps, etc., locally known as tasibe mera.

This is the common, spontaneous, Indo-Malayan form with small red flowers that is generally placed under Canna indica Linn. As noted by Kränzlin, in Engl. Pflanzenreich 56 (1912) 59, it is very difficult to determine the exact status of Canna indica, as described by Linnaeus. The Linnean species, as here interpreted, is apparently not the form described by Kränzlin. Cannacorus was originally reduced by Linnaeus to Canna angustifolia Linn., in Stickman Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 842, which is certainly an error; in the second edition of his Species Plantarum (1762) 1, however, he placed Cannacorus under Canna indica Linn., which seems to be the correct disposition of it. By other authors it has been placed under Canna patens Rosc., C. orientalis Rosc., and C. coccinea Ait.

MARANTACEAE

(By TH. VALETON)

DONAX Loureiro

DONAX CANNIFORMIS (Forst.) K. Schum. in Engl. Bot. Jahrb. 15 (1893) 440; Rolfe in Journ. Bot. 45 (1907) 243.

Thalia cannaeformis Forst. Prodr. (1786) 1.

Actoplanes canniformis K. Schum. in Engl. Pflanzenreich 11 (1902) 34 p. p., excl. syn. Maranta grandis Miq. quae est A. ridleyi K. Schum.

Arundastrum Rumph. Herb. Amb. 4: 22, t. 7.

AMBOINA, Soja and Way tommo, Robinson Pl. Rumph. Amb. 520, August, 1913, along river banks and in forests, altitude 45 to 400 meters; between Waë and Toelehoe and at Laha, Boerlage 191, 516, in Herb. Bog.

Arundastrum Rumph. was originally reduced to Maranta arundinacea Linn., as a variety, by Lamarck, Encycl. 2 (1788) 588, where it manifestly does not belong. Loureiro, Fl. Cochinch. (1790) 11, placed it under Donax arundastrum Lour., which is a species of Donax distinct from D. canniformis K. Schum. By Willdenow, Sp. Pl. 1 (1797) 13, it was erroneously placed under the American Maranta tonckat Aubl.—Stromanthe tonckat Eichl. Roxburgh, Fl. Ind. ed. 2, 1 (1832) 2, placed it under Phrynium dichotomum Roxb., which is Schumannianthus dichotomus Gagnep.; and Dietrich placed it under Maranta dichotoma Wall., a synonym of the latter species. The synonymy of Donax canniformis K. Schum. and of the several species in the allied genus Schumannianthus is very complicated, but has been admirably cleared up by Rolfe in Journ. Bot. 45 (1907) 242–244.

PHACELOPHRYNIUM K. Schumann

PHACELOPHRYNIUM ROBINSONII Val. sp. nov.

Folium buccinatum album Rumph. Herb. Amb. 5: 142.

AMBOINA, Mahija, Robinson Pl. Rumph. Amb. 521 (type), August 7, 1913, along small streams, altitude about 250 meters, locally known as dauri; Waigama, Teysmann sine numero in Herb. Bog. (specim. fructif.).

Herba bimetralis. Caulis florifer 150 ad 450 mm longus. Folia longissime petiolata (pet. propr. 100 mm, vagina fere 1,200 mm), maxima late oblonga vel elliptica (lamina 400×250 , vel 470×240 , vel 500×170 mm) apice attenuata vel subrotundata breviter (10 mm) apiculata, basi vulgo rotundata ad petiolum constricta acuta, glaberrima. Inflorescentiae pedunculo 100 ad 200 mm longo, rhachi glabra, singulae foliis 1 ad 2 comitatae subsimplices, haud interruptae, ramis paucis (2 ad 4) e bracteis inferioribus exortis erectis, spicae primariae breviores, internodia inferiora 30 ad 65 mm longa, superiora brevia

(5 ad 16 mm), bracteis spicularum densis plus minus occulta. Bracteae primariae 45 ad 25 mm longae, oblongae mucronatae superiores minores acutae ad 20 mm longae apice et basi minute puberulae, erectae. Florum paria 2 vel 3 bracteolis teneris paucis. Fl. brevipedicellati ad 25 mm longi. Ovarium teres (3 mm) appresse villosum, triloculare, triovulatum. anguste lanceolata apice acuta incurva 7 mm longa. Floris tubus gracilis elongatus (16 mm longus), petala lineari-oblonga genitalia superantia circ. medio tubo inserta ± 10 ad 12 mm Staminodium exterius singulum valde elongatum lineare 7 mm longum, 1.5 mm latum, labellum (std. callosum) elongatum ellipticum apice dilatatum emarginatum valde concavum, callo superne tenui glabro, lobulo basali velutino (±6 mm longum). Cucullum multo brevius, appendicula haud magna, basi auriculata munitum, stamen fertile subfiliforme, loculo petaloideo angusto inconspicuo 4 mm longum. Caryopsis parva (10 mm longa, 5 mm lata) teres oblonga apice rotundata et calyce coronata, uni latere concava, pericarpio tenui stramineo appresse hirsuto, abortu nunc unilocularis indehiscens, monospermus (teste Rumphius dispermus). Semen teres apice acutum, basi arillo magno nigro bipartito lobis magnis attenuatis instructum. Embryo leviter curvatum.

Doctor Robinson's hypothesis that the specimen of his collection, cited above, represented Folium buccinatum album Rumph. was a very ingenious one. Rumphius's description tallies so exactly with the specimens that it would be impossible to find another species that better agrees with it. It is a very fine new species of Phacelophrynium, differing from the generic diagnosis in its 1- or 2-celled nuts (instead of 3-celled 3-valved capsules) and its long corolla-tube. There is, however, only one exterior staminode, and this character together with the whole habit of the species, which closely resembles Phacelophrynium interruptum K. Schum., induces me to place it in Phacelophrynium rather than to propose for it a new generic name. The fruit is rather remarkable and is to be compared only with that of Halopegia K. Schumann.

COMINSIA Hemsley

COMINSIA GIGANTEA (Scheff.) K. Sch. in Engl. Pflanzenreich 11 (1902) 58, f. 10.

Phrynium giganteum Scheff. in Ann. Jard. Bot. Buitenz. 1 (1876) 58. Folium buccinatum asperum Rumph. Herb. Amb. 5: 142, t. 62, f. 1 (sphalm. 2).

Not represented in Robinson's Amboina collections, but col-

lected in Amboina by *Boerlage* and known from Halmaheira, New Guinea, Bismarck Archipelago, and the Solomon Islands. Rumphius's description and figure unmistakably refer to *Cominsia gigantea* K. Sch. Burman f. erred in referring fig. 2, of plate 62 to Folium buccinatum asperum Rumph. in the explanation of the plate; it is Folium buccinatum Rumph.=Heliconia bihai Linn., as the description shows. Horaninow thought it might be a Phrynium, and Teysmann, quoted by Hasskarl, thought that it might be a Hellenia (=Alpinia); see Heliconia bihai Linn., page 150.

COMINSIA RUBRA Val. sp. nov.

Herba multicaulis, caulibus complanatis e vaginis 4 compositis. Folia magna late elliptica (Heliconia Bihai referentia), antice rotundata acumine convoluto, valde inaequilatera, 600 ad 900 mm longa 180 ad 250 mm lata consistentia firma, haud ad latera findentia, supra in vivo glauco-viridia subtus pallide fusca vel violacea. Nervi laterales circ. 12 ad 15 mm inter se remoti. Petioli ad 750 mm longi basi cum ligula pubescentes. Herba florens ad 2.5 metr. alta, 15 mm crassa, pilis bulbillosis densis scabra, foliis 2, 1,200 mm longis 400 mm latis. Panicula magna terminalis ad 400 mm longa ramosissima rachi laxe pubescente, valde densiflora, internodiis denudatis, inferioribus ad 45 mm, superioribus ±10 mm longis. Bracteae vaginantes 35 ad 45 mm longae glabrae. Flores ignoti.

The description is from specimens in the Buitenzorg herbarium, collected in Amboina by *Botter*, and bearing the native name *kokin merah*, which is also cited by Rumphius. It is certainly a species of *Cominsia*, well characterized by the scabrid sheaths. It is distinguished by the much denser, pubescent inflorescence and by the wider leaves, which are purple beneath.

ORCHIDACEAE *

(By J. J. SMITH)

PLATANTHERA L. C. Richard

PLATANTHERA SUSANNAE (Linn.) Lindl. Gen. et Sp. Orch. (1835) 295.

Orchis susannae Linn. Sp. Pl. (1753) 939.

^{*} All specimens of *Orchidaceae* collected by Doctor Robinson in Amboina were sent me at Leiden. Owing to the abnormal conditions brought about by the European war, I considered it inadvisable to take the specimens with me on my return to Buitenzorg, so that it has been impracticable to cite the numbers collected by Doctor Robinson in this consideration of the *Orchidaceae* described by Rumphius. [J. J. S.]. For citations of Robinson's specimens of *Orchidaceae*, see Addenda, p. 548. [E. D. M.]

Orchis gigantea Sm. Exot. Bot. 2 (1804-05) 79, t. 100.

Habenaria gigantea Don Prodr. (1825) 24.

Habenaria susannae R. Br. Prodr. (1810) 312.

Platanthera gigantea Lindl. in Wall. Cat. (1832) no. 7052.

Flos susannae Rumph. Herb. Amb. 5: 286, t. 99.

I have no doubt that Flos susannae minor Rumph. belongs with Habenaria rumphii Lindl.

PERISTYLUS Blume

PERISTYLUS sp.

Orchis amboinica minor altera Rumph. Herb. Amb. 6: 118, t. 44, f. 3.

The plant figured by Rumphius is certainly a *Peristylus*. I do not know any species like it from Amboina.

HABENARIA Willdenow

HABENARIA RUMPHII (Brongn.) Lindl. Gen. et Sp. Orch. (1835) 320.

Platanthera rumphii Brongn. Bot. Duperrey Voy. (1829) 104, t. 38, f. A.

Orchis amboinica minor Rumph. Herb. Amb. 5: 287; 6: 118, t. 54, f. 2. Flos susannae minor Rumph. Herb. Amb. 5: 287.

ANOECTOCHILUS Blume

ANOECTOCHILUS REINWARDTII Blume Fl. Jav. Orch. (1858) 48, t. 12, f. 2; t. 12b, f. 14; J. J. Sm. Orch. Amb. (1905) 12.

Folium petolatum Rumph. Herb. Amb. 6: 93.

Folium petolatum femina s. vera Rumph. Herb. Amb. 6: 92, t. 41, f. 3.

The flowers of this plant are unknown, so that the determination is somewhat doubtful. It is certainly not *Macodes petola* Lindl.

ZEUXINE Lindley

ZEUXINE AMBOINENSIS J. J. Sm. in Ic. Bog. 2 (1905) 259; Schltr. in Bull. Herb. Boiss. II 6 (1906) 298.

Haplochilus amboinense J. J. Sm. in Bull. Inst. Bot. Buítenz. 7 (1900) 2.

Folium petolatum mas Rumph. Herb. Amb. 6: 92, t. 41, f. 2?

This species was not described by Rumphius. The figure, which presents a sterile plant, doubtless represents a species of the *Physurinae* and may belong to *Zeuxine amboimensis* J. J. Sm.

COELOGYNE Lindley

COELOGYNE RUMPHII Lindl. Fol. Orch. Coelogyne (1854) 14 (type!); J. J. Sm. Orch. Amb. (1905) 16.

Pleione rumphii O. Kuntze Rev. Gen. Pl. (1891) 690.

Epidendrum nervosum Lam. Encycl. 1 (1783) 186 (type!), non Coelogyne nervosa Rich.

Coelogyne psittacina Reichb. f. Xen. Orch. 2: 141, t. 153.

Angraecum nervosum Rumph. Herb. Amb. 6: 106, t. 48.

CALANTHE * R. Brown

CALANTHE VERATRIFOLIA R. Br. in Bot. Reg. 9 (1823) t. 270.

Limodorum veratrifolium Willd. Sp. Pl. 4 (1805) 122.

Calanthe furcata Batem. in Bot. Reg. 24 (1838) Misc. 28.

Amblyglottis veratrifolia Blume Bijdr. (1825) 370.

Limodorum ventricosum Steud. Nomencl. ed. 1 (1821) 481.

Calanthe triplicata Ames in Philip. Journ. Sci. 2 (1907) Bot. 326, non Orchis triplicata Willem.

Flos triplicatus Rumph. Herb. Amb. 6: 115, t. 52, f. 2.

Mr. Oakes Ames † has adopted the name Calanthe triplicata (Willem.) Ames for the plant usually known as Calanthe veratrifolia R. Br. on the supposition that Orchis triplicata Willem. was the oldest name for the species. From the original description of Orchis triplicata Willem., for a copy of which I am indebted to Mr. Merrill, this was certainly not based on Flos triplicatus Rumph., although the Rumphian name was cited as a synonym, but was based on a Mauritius plant, presumably Calanthe sylvatica Lindl., so that Calanthe triplicata Ames, not Orchis triplicata Willem., becomes a synonym of C. veratrifolia R. Br. Willdenow's description of Limodorum veratrifolium is too vague to determine whether it was intended for Calanthe veratrifolia R. Br. or C. sylvatica Lindl. He cites both Flos triplicatus Rumph. and Orchis triplicata Willem. as synonyms and gives the distribution as "Ind. Or." Even if Limodorum veratrifolium Willd. belongs with Calanthe sylvatica Lindl., both Calanthe veratrifolia R. Br. and Amblyglottis veratrifolia Blume go entirely with the Malayan plant. It is generally accepted that Calanthe veratrifolia was published by Roxburgh in Bot. Reg. 7 (1821) sub. t. 573; this is incorrect, as Roxburgh merely states that the genus Calanthe should be separated from Limodorum, but makes no new combination. Calanthe veratrifolia appears first in Bot. Reg. 9 (1823) t. 270. The form described by Rumphius may eventually prove to belong to a different species.

PHAJUS Loureiro

PHAJUS AMBOINENSIS Blume Mus. Bot. 2 (1856) 180; J. J. Sm. Orch. Amb. (1905) 21.

Phajus zollingeri Rchb. f. Xenia Orch. 2: 201, Bonplandia 5 (1857) 42. Angraecum terrestre alterum Rumph. Herb. Amb. 6: 113, t. 52, f. 1, non t. 50, f. 3.

In the Herbarium Amboinense t. 52, f. 1, is erroneously

^{*} Retained name, Vienna Code; Alismorkis Thou. = Alismorchis Thou. (1809) is older.

[†] Philip. Journ. Sci. 2 (1907) Bot. 326.

referred to Angraecum terrestre primum purpureum (Spathoglottis plicata Bl.), which was not figured; and t. 50, f. 3, to Angraecum terrestre alterum (Phajus amboinensis Bl.), with which t. 52, f. 1, doubtless belongs. Linnaeus and Blume did not notice these errors, and therefore the two artificial species Epidendrum terrestre Linn. and Phajus rumphii Blume, both composed of the characteristics of the two species mentioned above, originate from this confusion. Linnaeus's original description of Epidendrum terrestre, which was not available in Buitenzorg, was copied and sent to me by Mr. Merrill. It is as follows:

Epidendrum terrestre. E. fol. radicalibus lanceolatis nervosis membranaceis, scapo vaginato, petalis oblongis, nectario cymbiformi bifido. Rumph. amb. 6, t. 52, f. 1 [Linnaeus Syst. ed 10 (1759) 1246].

Apart from the characteristics Angraecum terrestre primum purpureum Rumph. and Angraecum terrestre alterum Rumph. have in common, that is "foliis lanceolatis nervosis membranaceis, scapo vaginato," the "folia radicalia" occur only in Spathoglottis, while in Angraecum terrestre alterum Rumph. the leaves are placed on an elongated erect stem. The nectary (lip) is cymbiform only in Angraecum terestre alterum Rumph. (Herb. Amb. 6: 114), and bifid only in Angraecum terrestre primum purpureum Rumph. (Herb. Amb. 6: 112).

Linnaeus, Sp. Pl. ed. 2 (1763) 1352, described *Epidendrum* tuberosum as follows:

Epidendrum foliis lato-lanceolatis nervosis membranaceis bulbo innatis, scapo vaginato, nectario cymbiformi bifido.

Helleborine purpurea, tuberosa radice. Plum. spec. 9. ic. 186. f. 2. Angraecum terrestre primum. Rumph. amb. 6. p. 112 t. 52. f. 1. Habitat in Indiis.

This too is a species of doubtful status, but I suppose that it has the same value as *Epidendrum terrestre* Linn. It is certainly not *Helleborine purpurea*, tuberosa radice Plum., for Plumier's species does not have a bifid nectary, nor can it be Angraecum terrestre primum Rumph., because the nectary of Rumphius's species is not cymbiform. Further it cannot be Angraecum terrestre alterum Rumph. as this has no bulbs and the nectary is not bifid.

PHAJUS GRATUS Blume Mus. Bot. 2 (1856) 181.

Limatodes grata Miq. Fl. Ind. Bat. 3 (1855) 672.

Angraecum terrestre primum album Rumph. Herb. Amb. 6: 113, t. 50, f. 3.

This species is unknown to me. From Rumphius's description

one would think that it referred to a white-flowered form of Spathoglottis, and, if this suggestion is correct, Blume's description applies only to the species figured by Rumphius, $t.\ 50$, $f.\ 3$. It is to be noted that Blume gives a detailed description of the lip of $Phajus\ gratus\ Bl.$, although he certainly did not see a specimen, and Rumphius does not describe the lip.

SPATHOGLOTTIS Blume

SPATHOGLOTTIS PLICATA Blume Bijdr. (1825) 401, Tabell. f. 76; J. J. Sm. Orch. Amb. (1905) 24.

Angraecum terrestre primum purpureum Rumph. Herb. Amb. 6: 112.

Rumphius's description applies to *Spathoglottis plicata* Blume. In the Herbarium Amboinense t. 52, f. 1 is erroneously referred here; it represents *Phajus amboinensis* Blume.

Phajus rumphii Blume, Mus. Bot. 2 (1856) 179, is an artificial species based on the characters of Angraecum terrestre primum purpureum Rumph. (Spathoglottis plicata Blume) and Angraecum terrestre alterum Rumph. (Phajus amboinensis Blume).

EULOPHIA * R. Brown

? EULOPHIA sp.

Orchis amboinica major radice digitata Rumph. Herb. Amb. 6: 116.

Hasskarl suggests that this plant may be *Cyrtoptera ensiformis* Lindl. Rumphius's description applies closely to *Eulophia*, but I do not know any species of the genus to which the statement "radix digitata" is applicable.

LIPARIS L. C. Richard

LIPARIS TREUBII J. J. Sm. nom. nov.

Liparis amboinensis J. J. Sm. in Bull. Jard. Bot. Buitenz. 13 (1914) 6, non Orch. Amb. (1905) 31.

Liparis confusa J. J. Sm. var. amboinensis J. J. Sm. Orch. Amb. (1905) 35.

Angraecum gajang Rumph. Herb. Amb. 6: 108.

There is no doubt that Angraecum gajang Rumph. is a Liparis. A careful study of the question of its identity has convinced me that it is the form I described as Liparis amboinensis, here called L. treubii; Rumphius's description agrees entirely with mine. In raising Liparis confusa var. amboinensis to specific rank, I unfortunately overlooked the fact that the name was preoccupied in the genus.

^{*} Retained name, Vienna Code; Graptorkis Thou. = Graptorchis Thou. (1809) is older.

DENDROBIUM * Swartz

DENDROBIUM CALCEOLUM Roxb. Hort. Beng. (1814) 63, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 488.

Dendrobium roxburghii Lindl. in Journ. Linn. Soc. Bot. 3 (1859) 4. Aporum roxburghii Griff. in Calc. Journ. Nat. Hist. 5 (1835) 370. Herba supplex quinta Rumph. Herb. Amb. 6: 111, t. 51, f. 2.

The citation of Rumphius by Roxburgh is incomplete, and as to the figure is erroneous.

DENDROBIUM ACINACIFORME Roxb. Hort. Beng. (1814) 63, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 487.

Dendrobium scalpelliforme T. & B. in Nat. Tijdschr. Ned. Ind. 27 (1864) 17; J. J. Sm. Orch. Amb. (1905) 111.

Herba supplex major prima s. Herba supplex femina Rumph. Herb. Amb. 6: 111.

Dendrobium acinaciforme Roxb. and D. scalpelliforme T. & B. are undoubtedly synonymous, and I think that the reduction of Herba supplex major prima to Dendrobium acinaciforme Roxb. is the correct disposition of it. The yellow color of the flowers is a character so uncommon in the group that it serves as a valuable indication of the identity of the Rumphian species. However, I have never seen specimens with stems as long as those described by Rumphius. It is certainly not Dendrobium calceolum Roxb., which is Herba supplex quinta. Rumphius's t. 51, f. 1, can scarcely belong with the plant described as Herba supplex prima, as he states that the leaves are in shape similar to those of Herba supplex minor, while the figure presents a species with flat, not laterally compressed, leaves; I do not recognize it.

DENDROBIUM PAPILIONIFERUM J. J. Sm. Orch. Amb. (1905) 42.

Dendrobium crumenatum Sw., fl. lilac. Miq. Choix. t. 22, f. 1.

Angraecum crumenatum Rumph. Herb. Amb. 6: t. 47, f. 2.

The figure of Angraecum crumenatum does not represent the species generally regarded as Dendrobium crumenatum Sw., but the form with purple flowers figured by Miquel and described by me as Dendrobium papilioniferum. I have not seen the original description of Dendrobium crumenatum Sw., but the common Malayan species currently known as D. crumenatum is certainly specifically distinct from Dendrobium papilioniferum J. J. Sm.

In the Herbarium Amboinense, explanation of t. 47, it is stated that $Angraecum\ crumenatum$ is described in chapter 57 of the Auctuarium. The only plant described in this chapter that

^{*} Retained name, Vienna Code; Callista Lour. (1790) is older.

agrees more or less with *Dendrobium crumenatum* is *Angraecum angustis crumenis*. I have thought that the material Rumphius described might have presented two species growing together, but after a careful study of the question I am now convinced that the plant in question must be an *Eria*, probably *Eria moluccana* Schltr. & J. J. Sm.

DENDROBIUM EPHEMERUM J. J. Sm. comb. nov.

Dendrobium papilioniferum J. J. Sm. var. ephemerum J. J. Sm. Orch. Amb. (1905) 45.

Angraecum album minus Rumph. Herb. Amb. 6: 99, t. 44, f. 1.

The plant is not a variety of *Dendrobium papilioniferum* J. J. Sm. as I formerly supposed, although it is not impossible that it is a hybrid. The suggestions of Linnaeus, Willdenow, and Hasskarl, who respectively reduced this form to *Epidendrum spathulatum* Linn., *Cymbidium ovatum* Willd., and *Dendrobium bursigerum* Lindl., are certainly incorrect. The other form described by Rumphius in this chapter is probably another species of *Dendrobium*, certainly not *Hysteria veratrifolia* Reinw., as Hasskarl has suggested.

DENDROBIUM RUMPHIANUM T. & B. in Nat. Tijdschr. Ned. Ind. 24 (1862) 317; J. J. Sm. Orch. Amb. (1905) 57.

Angraecum flavum sextum moschatum s. odoratum Rumph. Herb. Amb. 6: 102.

? Angraecum flavum nonum Rumph. Herb. Amb. 6: 104, excl. fig.

It is possible that *Dendrobium minax* Rchb. f., which I formerly reduced to *D. rumphianum* T. & B., may represent some other species. It is very doubtful whether or not the Bali plant mentioned by Rumphius belongs with this species. Rumphius's description of *Angraecum flavum nonum* agrees very well with this species, but the figure closely resembles that of *Angraecum flavum septimum*.

DENDROBIUM MIRBELIANUM Gaudich. Bot. Freyc. Voy. (1826) 423, t. 38; J. J. Sm. Orch. Amb. (1905) 56.

Dendrobium prionochilum Kränzl. in Österr. Bot. Zeitschr. 44 (1894) 261 (ex Kränzl.).

Dendrobium rosenbergii T. & B. in Nat. Tijdschr. Ned. Ind. 24 (1862) 317.

Angraecum flavum septimum Rumph. Herb. Amb. 6: 103, t. 45; (t. 46, f. 2?).

I cannot distinguish Rumphius's figure of Angraecum flavum nonum (t. 46, f. 2) from that of Angraecum flavum septimum (t. 45). The description of the former, however, agrees very well with Angraecum flavum sextum moschatum Rumph. = Dendrobium rumphianum T. & B.

DENDROBIUM MOLUCCENSE J. J. Sm. in Bull. Jard. Bot. Buitenz. 13 (1914) 11.

Dendrobium atropurpureum J. J. Sm. (nec Miq.) Orch. Amb. (1905) 54.

Herba supplex minor Rumph. Herb. Amb. 6: 110, t. 50, f. 2.

The species of the section Oxystophyllum have been frequently misunderstood and misinterpreted, partly due to the incomplete descriptions. Herba supplex minor is neither Dendrobium concinnum Mig. nor D. atropurpureum Mig.

DENDROBIUM PURPUREUM Roxb. Fl. Ind. ed. 2, 3 (1832) 484.

Dendrobium viridiroseum Rchb. f. in Bonplandia 3 (1855) 226. Angraecum purpureum silvestre Rumph. Herb. Amb. 6: 109. t. 50, f. 1.

There is no doubt as to the correctness of this reduction, which was made by Roxburgh.

DENDROBIUM ANOSMUM Lindl. in Bot. Reg. 21 (1844) Misc. 41.

Dendrobium superbum Rchb. f. var. anosmum Rchb. f. in Walp. Ann. 6 (1861) 283.

Dendrobium superbum Rchb. f. in Walp. Ann. 6 (1861) 282.

Dendrobium macrophyllum Lindl. Bot. Reg. 25 (1839) Misc. 36, non A. Rich.

Dendrobium macranthum Hook. in Curtis's Bot. Mag. 69 (1843) t. 3870, non A. Rich.

Dendrobium scortechinii Hook. f. Fl. Brit. Ind. 5 (1890) 741.

Dendrobium leucorhodum Schltr. Orch. Neu-Guinea (1913) 499.

Angraecum caninum s. undecimum Rumph. Herb. Amb. 6: 105, t. 47, f. 1.

I have seen no specimens of *Dendrobium anosmum* Lindl., but as the plant is usually considered to be a mere variety of *Dendrobium superbum* Rchb. f. there is no good reason for replacing Lindley's name by the more recent one proposed by Reichenbach f. The figure of *Dendrobium anosmum* Lindl., in Paxt. Mag. Bot. 15: 97, represents a short-flowered form of *Dendrobium superbum* Rchb. f. *Dendrobium anosmum* Lindl. is credited to the Philippine Islands by Lindley, Bot. Reg. 31 (1845) Misc. 32, but is not mentioned by Mr. Ames.

DENDROBIUM sp.

Herba supplex major quarta Rumph. Herb. Amb. 6: 111.

The description of the flower is strongly suggestive of *Dendro-bium confusum* Schltr., but so far as I know Schlechter's species never attains the length noted by Rumphius. Suggested reductions by other authors are in contradiction with the description.

DENDROBIUM sp.

Angraecum purpureum et nudum Rumph. Herb. Amb. 6: 109, t. 49, f. 2. Lindley reduced this form to Dendrobium bifarium Lindl., the

correctness of which I doubted in my former consideration of the Amboina Orchidaceae.* Dendrobium bifarium Lindl. was based on a flowerless specimen from Penang and is now recognized as a species of the section Distichophyllum with solitary flowers. Accordingly Angraecum purpureum et nudum Rumph. cannot possibly belong here. The form described by Rumphius is apparently a species of Dendrobium, perhaps of the section Pedilonum.

DENDROBIUM sp.

Angraecum jamboe Rumph. Herb. Amb. 6: 108.

In my former treatment of the *Orchidaceae* of Amboina I reduced this to *Dendrobium pruinosum* T. & B., but I now am of the opinion that that was an erroneous disposition of it. The leaves are not acute, and the lip is not violet-blue. Doctor Robinson in his field notes suggests that the plant may be *Pseuderia foliosa* Schltr., but there are so many discrepancies between Rumphius's description and the characters of Brongniart's species that it is very doubtful if this suggested disposition of it is the correct one. I suppose that the plant in question is a species of *Dendrobium* of the section *Grastidium*.

? DENDROBIUM sp.

Herba supplex major tertia Rumph. Herb. Amb. 6: 111.

The status of this plant is doubtful, but it is probably a species of *Dendrobium* of the section *Rhoplalanthe*. It certainly cannot be referred to *Dendrobium atropurpureum* Miq. as Hasskarl suggested.

? DENDROBIUM sp.

Herba supplex major secunda Rumph. Herb. Amb. 6: 111.

The description is so vague that it is not even certain that the plant described by Rumphius belongs in the genus *Dendrobium*. According to the explanation of t. 51, f. 1, this figure represents Herba supplex femina s. secunda, not Herba supplex major secunda.

ERIA † Lindley

ERIA MOLUCCANA Schltr. & J. J. Sm. Orch. Amb. (1905) 74.

Angraecum angustis crumenis Rumph. Herb. Amb. 6: 107.

Under *Dendrobium papilioniferum* J. J. Sm. I have already pointed out that this is probably the correct disposition of the plant Rumphius described. The data given by Rumphius con-

^{*} Orch. Amb. (1905) 62, 119.

[†] Retained name, Vienna Code; Pinalia Buch.-Ham. (1825) is older.

forms closely with the characters of *Eria moluccana* Schltr. & J. Sm., the two lateral leafy stems being the inflorescences with bracts.

ERIA sp.

Angraecum lanuginosum Rumph. Herb. Amb. 6: 108.

The form described is doubtless an *Eria* of the section *Trichotosia*. No species of this section has as yet been described from Amboina under the binomial system.

BULBOPHYLLUM * Thouars

BULBOPHYLLUM sp.

Angraecum uniflorum Rumph. Herb. Amb. 6: 107.

The description of this plant in almost every point applies to *Bulbophyllum grandiflorum* Blume, but so far as I know Blume's species has not been recorded from Amboina.

GRAMMATOPHYLLUM Blume

GRAMMATOPHYLLUM SCRIPTUM (Linn.) Blume Rumphia 4 (1848) 48; J. J. Sm. Orch. Amb. (1905) 84.

Grammatophyllum rumphianum Miq. Ann. Mus. Bot. Lugd. Bat. 4 (1869) 219, t. 8, 9.

Grammatophyllum speciosum Lindl. Gen. et. Sp. Orch. (1833) 173, p. p. Grammatophyllum leopardinum Rchb. f. in Flora 46 (1888) 151.

Grammatophyllum guilelmi II Kränzl. in Gartenfl. 43 (1894) 114.

Gabertia scripta Gaudich. Bot. Freyc. Voy. (1826) 425.

Vanda scripta Spreng. Syst. 3 (1826) 719.

Cymbidium scriptum Sw. in Schrad. Journ. (1799) 218.

Epidendrum scriptum Linn. Sp. Pl. ed. 2 (1763) 1351 (type!).

Angraecum scriptum Rumph. Herb. Amb. 6: 95, t. 42.

In addition to the above form Rumphius describes two other species in this chapter, one growing on *Mangifera* and other trees, the other on *Cocos*. Hasskarl suggests that the first may be *Cymbidium wallichii* Lindl., while Blume refers the latter, from its Portuguese name *Fulha alacra*, to *Arachnis flos aeris* Rchb. f. The suggested reductions of both, however, are contradicted by Rumphius's descriptions.

PHALAENOPSIS Blume

PHALAENOPSIS AMABILIS (Linn.) Blume Bijdr. (1825) 294, Tabell. f. 44.

Epidendrum amabile Linn. Sp. Pl. (1753) 953.

Cymbidium amabile Roxb. Hort. Beng. (1814) 63.

Phalaenopsis grandiflora Lindl. in Gard. Chron. (1848) 39.

Angraecum album majus Rumph. Herb. Amb. 6: 99, t. 43.

Rumphius briefly describes two forms which, without doubt,

^{*} Retained name, Vienna Code; *Phyllorkis* Thou. = *Phyllorchis* Thou. (1809) is older.

¹⁴⁴⁹⁷¹⁻⁻⁻⁻¹²

are referable to the same species. It is well known that the flowers of *Phalaenopsis amabilis* Blume vary considerably in size, in the form of the sepals, petals, lip, and especially in the size and markings of the yellow area on the lip. Specimens with the sepals purplish on the outside are not rare. Rumphius's description of the first form does not at all apply to *Phalaenopsis violacea* T. & B., to which it was reduced by Hasskarl.

LUISIA Gaudichaud

LUISIA CONFUSA Rchb. f. in Walp. Ann. 6 (1861) 621.

Luisia teretifolia Blume (non Gaudich.) Rumphia 4 (1848) t. 194, f. 3, t. 197D.

Angraecum decimum et angustifolium Rumph. Herb. Amb. 6: 104.

Luisia teretifolia Gaudich., as formerly interpreted, contained several distinct species. I think that Reichenbach was correct in separating from it the Amboina form under the name Luisia confusa Rchb. f.

VANDA R. Brown

VANDA FURVA Lindl. (non Blume) Gen. et Sp. Orch. (1833) 215; J. J. Sm. Orch Amb. (1905) 98.

Cymbidium furvum Willd. Sp. Pl. 4 (1805) 103.

Epidendrum furvum Linn. Sp. Pl. ed. 2 (1763) 1348 (type!), excl. syn. Rheede.

Angraecum octavum et furvum Rumph. Herb. Amb. 6: 104, t. 46, f. 1. VANDA sp.

Vanda crassiloba T. & B. (non J. J. Sm.) in Cat. Hort. Bogor. (1866) 48, nomen nudum.

Angraecum saxatile Rumph. Herb. Amb. 6: 107, t. 49, f. 1.

The plant I described in my former treatment of the *Orchidaceae* of Amboina as *Vanda crassiloba*, is certainly not the same as the species Teysmann and Binnendijk had in view. The latter is very similar to *Vanda celebica* Rolfe and will probably prove to be a variety of this or a closely allied species when fresh material from Amboina shall have become available. The species of the *Vanda hastifera* group are in want of revision. It is evidently quite different from *Cymbidium*, where it was placed by Hasskarl.

VANDOPSIS Pfitzer

VANDOPSIS LISSOCHILOIDES (Gaudich.) Pfitz. in Engl. & Prantl Nat. Pflanzenfam. 2 ° (1889) 210, f. 229.

Fieldia lissochiloides Gaudich. Bot. Freyc. Voy. (1826) 424, t. 36.

Vanda lissochiloides Lindl. Gen. et Sp. Orch. (1833) 216.

Vanda batemannii Lindl. in Bot. Reg. (1846) t. 59.

Stauropsis lissochiloides Benth. ex Pfitz. Vergl. Morph. Orch. (1882) 14.

Angraecum quintum Rumph. Herb. Amb. 6: 102.

RENANTHERA Loureiro

RENANTHERA MOLUCCANA Blume Rumphia 4 (1848) 54, t. 193, f. 2; t. 197E.

Angraecum rubrum Rumph. Herb. Amb. 6: 101, t. 44, f. 2.

I do not understand the exact status of the form of this plant described by Rumphius.

SARCANTHUS Lindley

SARCANTHUS SUBULATUS (Blume) Reichb. f. in Bonplandia 5 (1857) 41; J. J. Sm. Orch. Amb. (1905) 103.

Sarcanthus secundus Griff. Not. 3 (1851) 362. Cleisostoma subulatum Blume Bijdr. (1825) 363. Angraecum pungens Rumph. Herb. Amb. 6: 106.

I have little doubt that the plant described by Rumphius as Angraecum pungens is the same as Sarcanthus subulatus Rchb. f. Usually the sepals and petals are light or dark brown with a pale center, but the specimen I collected in Amboina had very pale flowers. Schoenorchis juncifolia Blume, to which Hasskarl reduced it, is a totally different plant.

ORCHIDACEAE OF UNCERTAIN STATUS

Angraecum sediforme Rumph. Herb. Amb. 6: 107. Unrecognizable.

Angraecum taeniosum Rumph. Herb. Amb. 6: 108.

The plant described by Rumphius evidently belongs in the Sarcanthinae. Maccabuhay Rumph. Herb. Amb. 5: 287.

It is not at all certain that this plant is an orchid. The material was from the Philippines; see *Tinospora*, *Menispermaceae*.

Satyria Rumph. Herb. Amb. 5: 287.

Unrecognizable. Rumphius's material was from China, the Chinese name pu sang tjan being quoted by him.

ANGIOSPERMAE

(DICOTYLEDONS)

CASUARINACEAE

CASUARINA Linnaeus

CASUARINA RUMPHIANA Miq. in Flora 48 (1865) 23 (type!), 38.

Casuarina montana Rumph. Herb. Amb. 3: 87, t. 58 (excl. f. A).

Amboina, Soja, Robinson Pl. Rumph. Amb. 411, October 24, 1913, altitude about 275 meters, locally known as kasuari.

Casuarina montana is the whole basis of Casuarina rumphiana Miq., as originally published in Flora 48 (1865) 23, but on page 38 of the same volume Miquel amplifies the description from

specimens collected in Amboina by Teysmann and DeVriese. In his Revisio critica Casuarinarum (1848) 282 and in his Flora Indiae Bataviae 1¹ (1858) 873, Miquel erroneously referred *Casuarina montana* Rumph. to *Casuarina nodiflora* Forst. The species is a characteristic one of the mountain forests of the Philippines and of the Moluccas.

CASUARINA EQUISETIFOLIA Linn. Amoen. Acad. 4 (1759) 143 (type!) (equisefolia); Forst. Char. Gen. (1776) 103. t. 52.

Casuarina litorea Rumph. Herb. Amb. 3: 86, t. 57.

This widely distributed and well-known species is not represented in our Amboina collections. Rumphius's figure is an excellent one, and there is no doubt whatever as to the correctness of this reduction, which was originally made by Linnaeus; in fact Casuarina litorea Rumph. is the type of Casuarina equisetifolia Linn. as published in Amoen. Acad. 4 (1759) 143, although the species is usually accredited to Forster (1776).

CASUARINA SUMATRANA Jungh. in Hoev. & DeVriese Tijdschr. 11 (1844) 115.

Casuarina celebica Rumph. Herb. Amb. 3: 87, t. 58 f. A.

This disposition of *Casuarina celebica* follows Miquel and is certainly correct. The species is well characterized by its relatively large fruits.

PIPERACEAE *

PIPER Linnaeus

PIPER ARBORESCENS Roxb. Hort. Beng. (1814) 80 (type!), Fl. Ind. 1 (1820) 161, ed. 2, 1 (1832) 159.

Piper miniatum Blume in Verh. Bat. Genoots. 11 (1826) 166. Sirium arborescens tertium Rumph. Herb. Amb. 5: 46, t. 28, f. 1.

AMBOINA, Soja, Way tommo, Koeda mati, Gelala, Amahoesoe, and Halong, Robinson Pl. Rumph. Amb. 62, 63, 64, 609, August and September, 1913, locally known siri seytan and siri tulak tulak.

The Rumphian illustration is the whole basis of *Piper arbores*cens Roxb. as originally published in the Hortus Bengalensis

^{*}I am under obligations to Mr. C. de Candolle, Geneva, Switzerland, for determinations of the *Piperaceae* collected by Doctor Robinson. In all but two cases the specimens are here quoted under the binomials indicated by him, the exceptions being *Piper decumanum* Linn., reported as *P. forstenii* C. DC., and *Piper arborescens* Roxb., reported as *P. miniatum* Blume, the specific name adopted by me being accepted as the oldest valid one in each case. The determinations of the Rumphian species are by Doctor Robinson and myself.

(1814) 80.* The species was later briefly described by Roxburgh from specimens collected in the Moluccas, the reference to Rumphius being included in the description. The description applies to the above specimens in all respects, and is not at all Thottea dependens Klotzsch, as reduced in Index Kewensis. The actual Amboina specimens were determined by C. de Candolle as Piper miniatum Blume, Blume's species thus becoming a synonym of Piper arborescens Roxb. In Stickman's Herb. Amb. (1754) 19, it is erroneously referred to Piper malamiris L.

PIPER CANINUM Blume in Verh. Bat. Genoots. 11 (1826) 214, var. GLABRIBRACTEUM C. DC. in Philip. Journ. Sci. 5 (1910) Bot. 459.

Piper caninum Rumph. Herb. Amb. 5; 49, t. 28, f. 2.

AMBOINA, Waë and Amahoesoe, Robinson Pl. Rumph. Amb. 57, August and November, 1913, on coral rocks and on trees at low altitudes.

Blume was certainly correct in referring this Rumphian species to *Piper caninum* Blume. Loureiro, Fl. Cochinch. (1790) 30, discussed it under *Piper sylvestre* Lour., while Roxburgh, Fl. Ind. 1 (1820) 161, reduced it to *Piper cubeba*; *Piper cubeba* Roxb., non Linn., is a synonym of *Piper caninum* Blume.

PIPER DECUMANUM Linn. in Stickman Herb. Amb. (1754) 19, Amoen. Acad. 4 (1759) 128 (type!), Syst. ed. 10 (1759) 856, Sp. Pl. ed. 2 (1762) 41, excl. syn. Plumier.

Piper forstenii C. DC. Prodr. 16 1 (1869) 348.

Sirium decumanum Rumph. Herb. Amb. 5: 45, t. 27.

Amboina, Hatiwe, Batoe merah, and Oerimesseng, Robinson Pl. Rumph. Amb. 61, August and September, 1913, climbing on trees, altitude 10 to 250 meters.

Sirium decumanum Rumph. is the whole basis of Piper decumanum Linn. as originally published and is hence the type of the species; Linnaeus took his specific name decumanum from Rumphius. Later he added also a reference to Plumier, Amer. 59, t. 76, which represents a species totally different from Sirium decumanum. C. de Candolle, Prodr. 16 1 (1869) 370, interpreted Piper decumanum Linn. from the reference to Plumier and described the Amboina species as Piper forstenii C. DC. Some of the early authors referred it to Piper methysticum Forst., but it has nothing to do with Forster's species. It has also been cited under Piper majusculum Blume and Chavica majuscula Miq., while Miquel referred it to Chavica rumphii Miq. Both Blume's and Miquel's species are apparently different from Piper decumanum Linn. (P. forstenii C. DC.) as here interpreted.

^{*} See C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 415.

PIPER BETLE Linn. Sp. Pl. (1753) 28.

Siriifolium Rumph. Herb. Amb. 5: 336, t. 116, f. 2.

The common betel pepper is not represented in our Amboina collections, yet *Piper betle* is manifestly the correct disposition of *Siriifolium* Rumph. Linnaeus reduced it, through error, to *Piper longum* Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, and later, Sp. Pl. ed. 2 (1762) 41, placed it under *Piper malamiris* Linn., which is apparently a synonym of *Piper betle* Linn. Radermacher, Loureiro, Roemer and Schultes, Blume, and other authors cite it under *Piper betle* Linn., and Miquel cites it under *Chavica betle* Miq.

PIPER BETLE Linn. var. SIRIBOA (Linn.) C. DC. Prodr. 16 1 (1869) 359.

Piper siriboa Linn. Sp. Pl. (1753) 29.

Siriboa Rumph. Herb. Amb. 5: 340, t. 117.

Siriboa Rumph. was originally reduced to Piper siriboa Linn., in Stickman Herb. Amb. (1754) 22, one year after the publication of the species, and has been very consistently cited under this name in subsequent botanical literature. The forms described by Rumphius as I alba, II cambing, and III fragrans are apparently but variants of Piper betle or the variety siriboa.

PIPER AMBOINENSE (Miq.) C. DC. Prodr. 16² (1869) 347.

Chavica amboinensis Miq. Ann. Mus. Bot. Lugd. Bat. 1 (1863-64) 134.

Sirium arborescens tertium alterum Rumph. Herb. Amb. 5: 48.

AMBOINA, Mahija, Batoe gadjah, and near the town of Amboina, Robinson Pl. Rumph. Amb. 58, ascending to an altitude of 250 meters, climbing on trees, locally known as siri seytan.

The specimen cited above represents a characteristic species of *Piper*, and it is probably the form described by Rumphius, here reduced to *Piper amboinense* C. DC.

PIPER REINWARDTIANUM (Miq.) C. DC. Prodr. 16 1 (1869) 354.

Macropiper reinwardtianum Miq. in Linnaea 21 (1848) 481. Sirium decumanum album Rumph. Herb. Amb. 5: 45.

AMBONIA, Waë, Lateri, and Halong, Robinson Pl. Rumph. Amb. 60, August and November, 1913, in light forests, altitude from sea level to 150 meters, locally known as siri utan, siri tallan, and siri tallan perampuan.

The specimen cited here probably represents the form that Rumphius described. Vahl, Enum. 1 (1804) 334, referred the Rumphian species to *Piper album* Vahl, a species based on Javan specimens and one of doubtful status. There is no particular reason for believing that the Amboina plant is the same as the Javan one described by Vahl, but it does appear from the description to be referable to *Piper reinwardtianum* C. DC.

PIPER RETROFRACTUM Vahl Enum. 1 (1804) 314.

Piper chaba Hunter in As. Res. 9 (1809) 391.

Chavica officinarum Miq. Syst. Pip. (1844) 256.

Piper officinarum C. DC. Prodr. 16 1 (1869) 356.

Piper longum Rumph. Herb. Amb. 5: 333, t. 116, f. 1.

Piper longum e Philippinis Rumph. Herb. Amb. 5: 334.

Pharmacum magnum vulgare Rumph. Herb. Amb. 5: 42, t. 26, f. 2?

Piper retrofractum Vahl is not represented in our Amboina The figure of Piper longum Rumph., however, seems to represent Vahl's species, this reduction being in agreement with Miquel and with C. de Candolle. The form from the Philippines I have determined largely from the native name cited by Rumphius, sabia being the universal name, at least about Manila, for Piper retrofractum Vahl. I follow Miguel also in reducing here Pharmacum magnum vulgare Rumph., who considered that it represented a form near Chavica officinarum Mig. Linnaeus reduced Piper longum Rumph. to Piper amalago Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 856, Sp. Pl. ed. 2 (1762) 41, which was an entirely erroneous disposition of it, as Piper amalago Linn. is an American species. Loureiro, Fl. Cochinch. (1790) 32, erroneously reduced it to Piper longum Linn. Roxburgh, Fl. Ind. 1 (1820) 158, placed it under Piper chaba Hunter, which is a synonym of *P. retrofractum* Vahl. Poiret, in Lamarck Encycl. 5 (1804) 460, erroneously placed it under Piper plantagineum Lam., and it has been cited under Chavica officinarum Mig. and Piper officinarum C. DC., both synonyms of Piper retrofractum Vahl.

PIPER CADUCIBRACTEUM C. DC. sp. nov.

Sirium silvestre Rumph. Herb. Amb. 5: 342, t. 118, f. 1, 2.

AMBOINA, Halong and Koeda mati, Robinson Pl. Rumph. Amb. 59 (type!), August and September, 1913, climbing on trees at low altitudes, locally known as siri seytan; Teysmann in Herb. Bogor.

Ramulis glabris; foliis breviter petiolatis glabris, limbo ovatoelliptico basi leviter inaequilatera utrinque acuto apice acute acuminato, in mare 5-plinervio, in femine 9-ninervio nervo centrali nervos adscendentes 2 mittente quorum supremus 2 in mare et 3 in femina a basi solutis quorum externi aliis multo breviores et tenuiores, petiolo basi ima vaginante; pedunculo glabro petiolum aequante vel paulo superante, stirpis masc. spica quam limbus pluries breviore, rhachi hirsuta, bracteae pelta rotunda glabra centro pedicellata pedicello hirsuto, staminibus 2 antheris minutis rotundatis 4-valvatis filamenta fere aequantibus; stirpis fem. spica quam limbus pluries breviore. rhachi hirsuta, bracteae pelta glabra elliptica centro pedicellata decidua pedicello hirsuto, baccis condensis obovatis glabris, stigmatibus rotundatis minutis.

Dioicum. Ramuli spiciferi in mare 1 mm in femina 1.5 ad 2 mm crassi, collenchyma libriforme in mare in fasciculos discretos dispositum in femina subcontinuum, fasciculi intramedullares 2-seriati, canalis lysigenus centralis periphericique multi. Limbo in sicco firme membranacei minute pellucido-punctulati, superi usque ad 18 cm longi et 8 cm lati. Petioli usque ad limbi latus longius 10 mm, inter limbi latera 1 mm longi. Spica in mare subflorens 4 cm longa et 2.25 mm crassa, in femina usque ad 4.5 cm longa et 3 mm crassa. Rhachis in mare et in femina canalibus lysigenis periphericis munita, bracteae pelta in mare 1 mm diam., in femina 1 mm longa et 0.75 mm alta, bacca 1.5 mm longa in siccò atrorubens vel nigra.

The above description, based on the two specimens cited above, has been kindly supplied by Mr. C. de Candolle of Geneva, Swit-The identification of Sirium silvestre Rumph, with Piper caducibracteum C. DC. has been made by myself, following Doctor Robinson's suggestion that the specimen collected by him possibly represented Rumphius's species. Two forms are described and figured by Rumphius, but I consider that Sirium silvestre II, at least as figured, represents merely a juvenile form of Sirium silvestre I. Linnaeus, in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 856, referred it to Piper malamiris Linn., where it certainly does not belong. Miquel thought that both forms described by Rumphius might be the same as Chavica malamiris Miq., which is merely a synonym of Piper malamiris Linn. C. de Candolle, Prodr. 16¹ (1869) 361, cites both figures with doubt under Piper sirium C. DC., which is essentially a new name for Chavica malamiris Mig.; only Indian specimens are cited, and it is entirely improbable that the Amboina plant cited by Rumphius is the same as the Indian one described. .

PIPER NIGRUM Linn. Sp. Pl. (1753) 28.

Piper album et nigrum Rumph. Herb. Amb. 5: 335.

This reduction follows Miquel, Syst. Piper. (1844) 309, and is unquestionably the correct disposition of the plant that Rumphius described.

PIPER SUBPELTATUM Willd. Sp. Pl. 1 (1798) 166 (type!). Lomba Rumph. Herb. Amb. 6: 133, t. 59, f. 1.

Linnaeus originally reduced Lomba to Piper peltatum Linn., an American species to which it does not belong, in Stickman

Herb. Amb. (1754) 27, Amoen. Acad. 4 (1759) 135, Sp. Pl. ed. 2 (1762) 42, in which he was followed by Burman f., Fl. Ind. (1768) 15. It is the type of *Piper subpeltatum* Willd., which C. de Candolle considers to be a variety of *Piper umbellatum* Linn., in Donn.-Sm. Enum. 6:39, Philip. Journ. Sci. 5 (1910) Bot. 463. Lomba has also been cited by various authors under the synonyms *Peperomia subpeltata* Dietr., *Peperidia subpeltata* Kostel., and *Potemorphe subpeltata* Miq.

PIPER SARMENTOSUM Roxb. Fl. Ind. 1 (1820) 162.

Sirium terrestre Rumph. Herb. Amb. 5: 344, t. 119, f. 1.

AMBOINA, Robinson Pl. Rumph. Amb. 56, July 17, 1913, along roadsides in the vicinity of the town of Amboina, July 17, 1913, locally known as siri rambang.

Miquel, Fl. Ind. Bat. 1² (1858) 446, thought that *Sirium terrestre* might be *Chavica sphaerostachya* Miq., but C. de Candolle, Prodr. 16¹ (1869) 389, definitely excludes it as a synonym of Miquel's species, and refers it, l. c. 360, to *Piper arcuatum* Blume. The specimen, however, which certainly represents the form that Rumphius described and figured, is not at all *Piper arcuatum* Blume, but is typical *Piper sarmentosum* Roxb.

PIPER sp.

Sirium frigidum rotundifolium Rumph. Herb. Amb. 5: 345, t. 119, f. 2.

This is not represented in our Amboina collections. Vahl, Enum. 1 (1804) 333, referred it to Piper diffusum Vahl, a species based on Ceylon specimens and which is apparently the same as Piper argyrophyllum Miq.; see Trimen Fl. Ceyl. 3 (1895) 429. Miquel, Fl. Ind. Bat. 1² (1858) 441, thought that it might be Piper sarmentosum Roxb., but the other form figured on the same plate, Sirium terrestre Rumph., is Piper sarmentosum Roxb. and is different from Sirium frigidum rotundifolium Rumph. The form described as Sirium frigidum latifolium Rumph., Herb. Amb. 5: 345, is indeterminable. Hasskarl, Neue Schlüssel (1866) 131, thought that it was Piper album Vahl, but there is no reason for considering that this reduction is correct.

PIPER sp.

Pharmacum magnum parvifolium Rumph. Herb. Amb. 5: 42, t. 26, f. 2.

Nothing in our Amboina collections matches this figure. The species is indeterminable from the data at present available.

PIPER sp.

Pharmacum magnum marinum Rumph. Herb. Amb. 5: 42. Indeterminable from data at present available.

FAGACEAE

QUERCUS Linnaeus

QUERCU6 MOLUCCA Linn. Sp. Pl. (1753) 1199 (type!).

Quercus molucca Rumph. Herb. Amb. 3: 85, t. 56.

The Rumphian figure and illustration are the whole basis of this species, which is one of the few published in the first edition of the Species Plantarum with references to the Herbarium Amboinense. The species has been recognized in all general works, but it is by no means certain that all of the botanical material in herbaria under the name *Quercus molucca* Linn. is of the same form as that figured and described by Rumphius. It is to be typified by material from the Sula Islands from whence Rumphius received his material.

A second form, very briefly described, having oblong inedible fruits, apparently represents a distinct species of *Quercus*. To this Hasskarl, Neue Schlüssel (1866) 54, refers t. 56, but this is certainly due to a typographical error, as on the preceding page the plate is properly cited under *Quercus molucca*.

ULMACEAE

CELTIS Tournefort

CELTIS PHILIPPENSIS Blanco Fl. Filip. (1837) 197.

Sirifolia Rumph. Herb. Amb. 3: 64, t. 36. Sirifolia litorea Rumph. Herb. Amb. 3: 64, t. 37.

Possibly two species are represented by the forms Rumphius described, but they are at least of the same genus. The figure representing Sirifolia presents a seedling and a leafy branch only, but the one representing Sirifolia litorea, a branch in fruit, is a very good representation of Celtis philippensis Blanco. Sirifolia was erroneously reduced by Henschel, Vita Rumph. (1833) 155, to Piper malamiris Linn., while Hasskarl, Neue Schlüssel (1866) 51, thought that it might be Cocculus angustifolius Hassk. Teysmann, quoted by Hasskarl, placed it in Sole-. nostigma=Celtis, where it certainly belongs. Sirifolia litorea Rumph., which more certainly represents Celtis philippensis Blanco than the preceding, was thought by Hasskarl, Neue Schlüssel (1866) 51, to be possibly the same as Cocculus laurifolius DC., which is an entirely erroneous disposition of it. Hasskarl also quotes Teysmann's opinion that it was a species of Solenostigma=Celtis. If it is not Celtis philippensis Blanco, which is widely distributed in the Philippines and extends to northeastern Australia, it at least represents a very closely allied form.

TREMA Loureiro

TREMA AMBOINENSIS (Willd.) Blume Mus. Bot. 2 (1856) 61 quoad. syn., excl. descr.!

Celtis amboinensis Willd. Sp. Pl. 42 (1805) 997.

Sponia amboinensis Decne. in Nuov. Ann. Mus. Paris 3 (1834) 498.

Trema virgata Blume Mus. Bot. 2 (1856) 59.

Sponia virgata Planch. in Ann. Sci. Nat. III 10 (1848) 316.

Cortex piscatorium Rumph. Herb. Amb. 4: 125, t. 61.

AMBOINA, Hitoe messen, Robinson Pl. Rumph. Amb. 328, November 5, 1913, in light forests, altitude about 100 meters, locally known as rufut.

Hasskarl, Neue Schlüssel (1866) 84, suggests that Cortex piscatorium may be Sponia timorensis Decne., which is the only previously suggested reduction of the Rumphian description and figure. Sponia timorensis Decne.=Trema timorensis Blume is manifestly closely allied to Trema virgata Blume=Trema amboinensis as here interpreted (not of other authors), which Lauterbach * confines to Timor Island, with the var. pallida (Blume) Lauterb. in Amboina. The Rumphian figure and description are manifestly applicable to Trema virgata Blume, the figure presenting equilateral leaves which are not cordate at the base and lax inflorescences, while the description definitely states that the leaves are: "ad tactum rugosa, sed non Lanuginosa." The actual Amboina specimen cited above, presents a form with rather small leaves, but otherwise agreeing very closely with the figure.

As to the synonymy given above, it is to be noted that Sponia amboinensis Decne.=Trema amboinensis Blume was based on Celtis amboinensis Willd., and Willdenow's description is very definitely applicable to Trema virgata Blume, not to Trema amboinensis as currently interpreted. The type was a specimen from Amboina, and the leaves are very definitely described as "scabriuscula" with no mention of the indumentum so characteristic of Trema amboinensis auct., while they are also very definitely described as equilateral at the base; in fact this character is the one on which the species was primarily distinguished from its congeners. It is very evident that Trema amboinensis of all modern authors is not the same as Celtis amboinensis Willd. on which it was manifestly based, but the type has been consistently misinterpreted. Trema amboinensis of modern authors should be reduced to Trema orientalis (Linn.) Blume, at least as a variety; while Trema virgata Blume, generally recognized as a valid species, becomes a synonym of the true Trema amboi-

^{*} Engl. Bot. Jahrb. 50 (1913) 317.

nensis (Willd.) Blume (Celtis amboinensis Willd.). Doctor Lauterbach, in answer to my query regarding the identity of Celtis amboinensis Willd., writes from Breslau as follows: "Das Originalexamplar von Celtis amboinensis im Willdenow Herbar ist von den Herrn Professoren Volkens und Gilg mit Trema orientalis var. amboinensis Lauterb. verglichen worden. Dasselbe stimmt mit derselben nicht überein, entspricht dagegen meiner Trema virgata Bl. var. seabra (Bl.) Ltb."

MORACEAE

MORUS Linnaeus

MORUS ALBA Linn. Sp. Pl. (1753) 986.

Morus indica Linn. Sp. Pl. (1753) 986. Morus indica Rumph. Herb. Amb. 7: 8, t. 5.

The form described and figured by Rumphius is the one described by Linnaeus as *Morus indica* Linn. and was reduced by Linnaeus to this species in his Syst. ed. 10 (1759) 1266. This disposition of it has been accepted by all authors who have had occasion to cite the Rumphian illustration. *Morus indica* Linn., however, does not appear to be specifically distinct from *Morus alba* Linn.

BROUSSONETIA L'Héritier

BROUSSONETIA PAPYRIFERA Vent. Tabl. Regn. Veg. 3 (1794) 547. Frutex lintearius Rumph. Herb. Amb. 4: 114, t. 53.

This reduction was made by Henschel, Vita Rumph. (1833) 165, and is apparently the correct disposition of *Frutex lintearius*. The material on which the figure and the description were based was from Celebes. The figure is poor and presents only a branch with leaves; the flowers and the fruits are not described.

TAXOTROPHIS Blume

TAXOTROPHIS ILICIFOLIA Vidal Rev. Pl. Vasc. Filip. (1886) 249.

Balanostreblus ilicifolia Kurz in Journ. As. Soc. Beng. 42¹ (1873) 247, t. 19.

Taxotrophis triapiculata Gamble Kew Bull. (1913) 188. Taxotrophis obtusa Elm. Leafl. Philip. Bot. 5 (1913) 1813. Ulet Rumph. Herb. Amb. 3: 62, t. 34.

No previous reduction of *Ulet* has been suggested other than Hasskarl's suggestion that it might be an *Antidesma*. It is, however, unquestionably a form of *Taxotrophis ilicifolia* Vidal, as shown by the figure and the description. In regard to the synonymy cited above, *Taxotrophis ilicifolia* Vidal was published

independently of Balanostreblus ilicifolia Kurz. Kurz's species has been reported from Celebes by Koorders, and an examination of Koorders's specimens at Buitenzorg convinced me that they were the same as the Philippine Taxotrophis ilicifolia Vidal, which lead me to suspect that Balanostreblus ilicifolia Kurz and Taxotrophis ilicifolia Vidal were one and the same thing. I am indebted to Sir D. Prain, director of the Royal Gardens, Kew, England, for the following memorandum supplied to me under date of June 28, 1916:

The material of Balanostreblus ilicifolius Kurz, and Taxotrophis ilicifolia Vidal has been compared in accordance with your request of May 9th, with the result that your surmise as to their identity is very probably correct. There is a slight difference in the male catkins which may be of no importance. In the Philippine plant they are very short, while in Balanostreblus ilicifolius, even in a young state, they are much longer. Balanostreblus Kurz, will therefore have to be reduced to Taxotrophis Blume, the anthers of which appear to be inflexed. I might mention that Taxotrophis triapiculata Gamble (Kew Bull. 1913, 188) proves to be the same as Balanostreblus ilicifolius Kurz.

I am now of the opinion that the recently described *Taxotrophis obtusa* Elm. is also a form of *T. ilicifolia* Vidal.

CUDRANIA Trécul

CUDRANIA JAVANENSIS Tréc. in Ann. Sci. Nat. III 8 (1847) 123.

Trophis spinosa Blume Bijdr. (1825) 489, non Roxb.

Batis spinosa Roxb. Hort. Beng. (1814) 71 (type!), non Fl. Ind. ed. 2, 3 (1832) 762.

Cudranus rumphii Thw. Enum. Pl. Ceyl. (1861) 262.

Maclura amboinensis Blume Mus. Bot. 2 (1849) 83.

Cudranus amboinensis Mig. Fl. Ind. Bat. 12 (1859) 290.

Cudranus spinosus O. Kuntze Rev. Gen. Pl. 2 (1891) 623.

Cudrania spinosa Hochr. in Bull. N. Y. Bot. Gard. 6 (1910) 489.

Cudranus bimanus Rumph. Herb. Amb. 5: 22, t. 15, f. 2.

Cudranus amboinicus Rumph. Herb. Amb. 5: 22, t. 15, f. 1.

Cudranus amboinicus silvestris Rumph. Herb. Amb. 5: 25, t. 16.

Not represented in our Amboina collections. The three "species" described and figured by Rumphius are apparently all referable to *Cudrania javanensis* Tréc., which name I interpret as the oldest valid one for the species. *Cudranus bimanus* Rumph. is the type and whole basis of *Batis spinosa* Roxb. as published in the Hortus Bengalensis (1814) 71,* but I consider the name to be invalidated in *Cudrania* by *C. spinosa* (Blume) Hochr. The species later described by Roxburgh under this name is entirely different from *Cudrania javanensis* Tréc.

^{*} See C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 415.

Trophis spinosa Roxb. as published by Willdenow, Sp. Pl. 4 (1805) 734, to which Cudranus bimanus Rumph. was also reduced, is Plecospermum spinosum Tréc. Retzius, Obs. 5 (1789) 30, reduced it to Trophis aspera Retz. with doubt, where it manifestly does not belong. Loureiro, Fl. Cochinch. (1790) 548, discussed the form figured on t. 16 under Morella rubra Lour.—Myrica nagai Thunb., which led Poiret to cite it under Ascarina rubra Poir., in Lam. Encycl. Suppl. 1 (1810) 475. The figures given by Rumphius have been cited under one or another of the various synonyms listed above.

ARTOCARPUS Forster

ARTOCARPUS INTEGRA (Thunb.) comb. nov.

Radermachia integra Thunb. in Vet. Akad. Handl. Stockh. (1776) 254. Artocarpus integrifolia Linn. f. Suppl. (1781) 412.

Polyphema jaca Lour. Fl. Cochinch. (1790) 546.

Artocarpus jaca Lam. Encycl. 3 (1789) 209.

Soccus (Saccus) arboreus major Rumph. Herb. Amb. 1: 104, t. 30.

The common jak fruit is well figured by Rumphius. Both t. 30 and the next species, t. 31, were reduced to Artocarpus integrifolia Linn. f. in the original description of that species, which was, however, essentially based on Radermachia integra Thunb. Following the rule of priority, I have here accepted Thunberg's specific name.

ARTOCARPUS CHAMPEDEN (Lour.) Spreng. Syst. 3 (1826) 804.

Polyphema champeden Lour. Fl. Cochinch. (1790) 547.

Artocarpus polyphema Pers. Syn. 2 (1805) 531.

Soccus (Saccus) arboreus minor Rumph. Herb. Amb. 1: 107, t. 31.

The Rumphian species was cited by Loureiro in the original description of *Polyphema champeden* Lour., which is the basis of both *Artocarpus polyphema* Pers. and *A. champeden* Spreng. The figure has been cited by several authors under *Artocarpus integrifolia* Linn. f. or as a variety of that species. The species commonly called *Artocarpus polyphema* Pers., here, following priority, called *Artocarpus champeden* Spreng., is manifestly the one intended by Rumphius.

ARTOCARPUS COMMUNIS Forst. Char. Gen. (1776) 101.

Radermachia incisa Thunb. in Vet. Akad. Handl. Stokh. (1776) 254.

Artocarpus incisa Linn. f. Suppl. (1781) 411.

Soccus lanosus Rumph. Herb. Amb. 1: 110, t. 32.

Soccus granosus Rumph. Herb. Amb. 1: 112, t. 33.

Soccus lanosus and Soccus granosus are respectively the seedless and seeded forms of the breadfruit, corresponding to the forms described by Blanco as Artocarpus rima Blanco and A. camansi Blanco. They are both referable to Artocarpus communis Forst. as that species is currently interpreted. Both, together with Soccus silvestris Rumph., were reduced to Artocarpus incisa Linn. f. i the original description of that species, which is typified by Radermachia incisa Thunb.

ARTOCARPUS ELASTICA Reinw. ex Blume Bijdr. (1825) 481.

Soccus silvestris Rumph. Herb. Amb. 1: 114, t. 34?

Not represented in our Amboina collections. This has been reduced to *Artocarpus communis* Forst. (*A. incisa* Linn. f.) by several authors and may be a sylvan form of that species, or it may prove to be referable to *Artocarpus elastica* Reinw., where it was placed by Teysmann as quoted by Hasskarl, Neue Schlüssel (1866) 16.

ARTOCARPUS RETICULATA Miq. Ann. Mus. Bot. Lugd. Bat. 3 (1867) 213.

Novella cinerea Rumph. Herb. Amb. 2: 227?

AMBOINA, Waë, Robinson Pl. Rumph. Amb. 173, November 26, 1913, along the seashore, locally known as mulewan.

The specimen agrees quite closely with Miquel's description of *Artocarpus reticulata*, but its identity with *Novella cinerea* Rumph. is rather problematical.

ARTOCARPUS FRETISSI Teysm. & Binn. ex Hassk. in Abhandl. Nuturf. Gesellsch. Halle 9 (1866) 189 (Neue Schlüssel 47) (type!).

Metrosideros spuria I, mas Rumph. Herb. Amb. 3: 26. t. 13, f. A.

A species of entirely doubtful status, to be interpreted from the description and figure given by Rumphius. As published, Artocarpus fretissi Teysm. & Binn. is typified wholly by the reference to Rumphius, as no description of the species was published by Teysmann and Binnendyck; the name does not appear in Index Kewensis. It is possible that the specimen intended by Teysmann and Binnendyck to represent the species is the one collected in Amboina by De Fretes and cited by Miquel, Ann. Mus. Bot. Lugd. Bat. 3 (1867) 213, under Artocarpus lakoocha Roxb.

ARTOCARPUS sp.

Metrosideros spuria II femina Rumph. Herb. Amb. 3: 27, t. 13, f. B.

The description and figure are apparently those of an *Arto-carpus*, but a further determination of its status is impossible at this time from the material and data available.

ARTOCARPUS sp.

Soccus silvestris celebicus Rumph. Herb. Amb. 1: 115.

The description is hardly sufficient to warrant an attempt

at determining the status of this form. Henschel's suggestion that it might be *Artocarpus lakoocha* Roxb. is not tenable.

ARTOCARPUS sp.

Caju bandaa Rumph. Herb. Amb. 1: 109.

As to the reference to Rheede this is *Artocarpus hirsuta* Lam., but the Javan plant discussed must be a different species, and its status is indeterminable at this time.

ANTIARIS * Leschenault

ANTIARIS TOXICARIA (Pers.) Lesch. in Ann. Mus. Paris 16 (1810) 478. Ipo toxicaria Pers. Syn. 2 (1807) 566.

Arbor toxicaria mas Rumph. Herb. Amb. 2: 263, t. 87.

This is the famous upas tree, and it is manifestly the form commonly known as *Antiaris toxicaria* Lesch. *Arbor toxicaria* Rumph. was reduced to *Ipo toxocaria* Pers. in the original description of the genus and species.

The form described by Rumphius as Arbor toxicaria femina is probably referable here. Blume has placed it under *Antiaris innoxia* Bl., which is a synonym of *A. toxicaria* Lesch.

FICUS Linnaeus

FICUS RACEMIFERA Roxb. Hort. Beng. (1814) 66 (type!).

Ficus amboinensis Kostel. Allgem. Med.-Pharm. Fl. 2 (1833) 408 (type!).

Ficus nodosa Teysm, & Binn. in Nat. Tijdschr. Ned. Ind. 29 (1867) 245.

Caprificus amboinensis esculenta latifolia Rumph. Herb. Amb. 3: 145, t. 93.

Amboina, Gelala and vicinity of the town of Amboina, *Robinson Pl. Rumph. Amb. 181*, July and August, 1913, along streams at low altitudes, locally known as *gondal*.

The Rumphian species was originally reduced by Linnaeus through error to Ficus benghalensis Linn., in Stickman Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 124. Loureiro, Fl. Cochinch. (1790) 665, discusses it under Ficus auriculata Lour., which, according to his description, is an entirely different species. It is the type and whole basis of Ficus racemifera Roxb. as originally published in the Hortus Bengalensis (1814) 66, by citation of the Rumphian figure, but is not the form later described by Roxburgh, Fl. Ind. ed. 2, 3 (1832) 560 (=Ficus variegata Blume), where the reference to Rumphius is repeated. It is also the type of Ficus amboinensis Kostel., which thus becomes a synonym of Ficus racemifera Roxb. The type of

^{*} Retained name, Vienna Code; Ipo Pers. (1807) is older.

Ficus nodosa Teysm. & Binn. was from Amboina. The figure given by Rumphius is decidedly poor, and from it alone the status of the species is indeterminable; in connection with Amboina material, however, it is clearly the species as here interpreted.

FICUS MOSELEYANA King in Ann. Bot. Gard. Calcutta 1 (1888) 144, t. 181.

Caprificus aspera tertia Rumph. Herb. Amb. 3: 151.

AMBOINA, Mahija, Robinson Pl. Rumph. Amb. 181, August 7, 1913, margins of forests, altitude about 250 meters, locally known as koti and gohi.

There is some doubt as to the correctness of this reduction of the Rumphian name, for the form described as *Caprificus aspera III* may be properly referable to *Ficus wassa* Roxb.

FICUS WASSA Roxb. Fl. Ind. ed. 2, 3 (1832) 539.

Caprificus aspera latifolia Rumph. Herb. Amb. 3: 150, t. 94. Caprificus aspera angustifolia Rumph. Herb. Amb. 3: 151.

Amboina, Soja, Elephant River, and town of Amboina, Robinson Pl. Rumph. Amb. 175, 176, 177, July, August, and September, 1913, from sea level to an altitude of 400 meters, locally known as gohi.

Roemer and Schultes erroneously reduced the Rumphian species to Ficus symphitifolia Lam.; Pritzel erroneously referred it to Ficus glomerata Roxb.; and Haskarl, Neue Schlüssel (1866) 60, thought that it might be Covella hispida Mig. The type of Ficus wassa Roxb. was a specimen cultivated in the botanic garden at Calcutta, originating in the Moluccas, and Roxburgh states in the original description: "Wassa of the Malayas, and probably Caprificus aspera Rumph. Amb. III t. 94." The specimens agree closely with the description of Rumphius and of Roxburgh, but the plate given by Wight, Ic. t. 666, presents a specimen with much more prominently toothed leaves than our Amboina material and, for that matter, than Roxburgh's description calls for. The receptacles are both axillary and solitary and on short tubercle-like racemes on the branches and trunk. Wassa is one of the native names cited by Rumphius for this species.

FICUS SEPTICA Burm. f. Fl. Ind. (1768) 226.

Ficus leucantatoma Poir. in Lam. Encycl. Suppl. 2 (1811) 654. Ficus septica Rumph. Herb. Amb. 3: 153, t. 96.

Amboina, Elephant River, near the town of Amboina, and Paso, Robinson Pl. Rumph. Amb. 189, July and October, 1913, locally known as siripopa.

The specimen agrees entirely with Rumphius's figure and description, and also with *Ficus leucantatoma* Poir. as currently

interpreted. Ficus septica Burm. f. has been quite overlooked by recent authors, but I believe that this name should be adopted in place of Poiret's. The Rumphian figure and description have been cited under Ficus septica Burm. f., by Loureiro, Lamarck, Vahl, Roemer and Schultes, Henschel, Kosteletzky, Walpers, Pritzel, and Miguel [Fl. Ind. Bat. 1² (1858) 311], but the name is not included in the later writings of Miquel on Ficus [Ann. Mus. Bot. Lugd. Bat. 3 (1867) 260-300], nor by King in his monumental work on the species of Ficus of the Indo-Malavan region [Ann. Bot. Gard. Calcutta 1 (1888) 1-185, t. 1-232]. the original description Burman f. first cited the Rumphian synonym, taking his specific name from Rumphius, followed by a citation of Handur-alu Rheede, Hort, Malabar. 3:77, t. 59, the citation of the Javanese name siri bipar, and the statement "Habitat in India;" it seems to be guite evident that he had a Javan specimen.

FICUS ALTISSIMA Blume Bijdr. (1825) 455.

Varinga latifolia Rumph. Herb. Amb. 3: 127, t. 84 bis.

This is not represented in our Amboina collections. originally reduced by Linnaeus to Ficus racemosa Linn., in Stickman Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 124, where it certainly does not belong, and later, Sp. Pl. ed. 2 (1763) 1515. was placed as a variety of Ficus indica Linn., which it certainly does not represent, no matter whether the latter be interpreted from the occidental or the oriental references. Several authors followed Linnaeus in citing Varinga latifolia Rumph. under Ficus indica Linn., and Roxburgh, Fl. Ind. ed. 2, 3 (1832) 539, states "the figure very bad" (i. e. for Ficus indica Linn.). Vahl, Enum. 2 (1805) 189, erroneously places it under Ficus cotoneaefolia The figure is not good, and the data given in the description indicate that it is greatly reduced, so that it somewhat resembles Ficus gelderi Miq. The description, however, applies very closely to Ficus altissima Blume and certainly represents this species or a very closely allied one.

FICUS PUNCTATA Thunb. Ficus (1786) 9.

Crusta arborum minor Rumph. Herb. Amb. 5: 84, t. 45.

AMBOINA, Amahoesoe and Hoetoemoeri road, Robinson Pl. Rumph. Amb. 182, August and September, 1913, climbing on trees, altitude 4 to 100 meters, locally known as tali oit.

No previous reduction of this Rumphian species has been suggested, other than Hasskarl's reference of it to the genus *Ficus*. The figure, the description, and the Amboina specimen cited

above, all manifestly represent a form of the widely distributed *Ficus punctata* Thunb. The forms described in this chapter as Crusta arborum II alba, III odorata, and IV minima, with the possible exception of the last, are species of *Ficus*, apparently all different from *Ficus punctata* Thunb., but their more exact status is quite indeterminable from the data given by Rumphius.

FICUS CONORA King in Ann. Bot. Gard. Calcutta 1 (1888) 103, t. 131.

Caprificus viridis major Rumph. Herb. Amb. 3: 152, t. 85.

AMBOINA, Way tommo and Hitoe lama, Robinson Pl. Rumph. Amb. 186, 187, August and October, 1913, in forests, ascending to an altitude of 20 meters, locally known as mussor.

The figure is a good representation of *Ficus conora* King, which is found in the Philippines, Ternate, and New Guinea; and the specimens agree with the figure, with the description, and also in the native name as cited by Rumphius. Blume erroneously reduced it to *Ficus ribes* Reinw., an allied species with smaller leaves and very much smaller receptacles. Henschel erroneously places it under *Ficus hispida* Blume, while Miquel thought that it might be *Covellia congesta* Miq., perhaps from Roxburgh's discussion of the Rumphian figure under *Ficus congesta* Roxb., Fl. Ind. ed. 2, 3 (1832) 560.

FICUS RUMPHII Blume Bijdr. (1825) 437.

Ficus cordifolia Roxb. Fl. Ind. ed. 2, 3 (1832) 548, non Blume. Arbor conciliorum Rumph. Herb. Amb. 3: 142, t. 91, 92.

Amboina, Hitoe lama, Robinson Pl. Rumph. Amb. 180, November 5, 1913, along the seashore.

Arbor conciliorum Rumph. was originally reduced by Linnaeus to the allied Ficus religiosa Linn., in Stickman Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 124, Syst. ed. 10 (1759) 1315, Sp. Pl. ed. 2 (1763) 1514. Blume, however, placed it under Ficus rumphii Bl. in the original description of that species, and Roxburgh likewise cites it in the original description of Ficus cordifolia Roxb. It was erroneously placed by Roemer and Schultes under Ficus populnea Willd., an American species.

FICUS BENJAMINA Linn. Mant. 1 (1767) 129.

Varinga parvifolia Rumph. Herb. Amb. 3: 139, t. 90.

Amboina, Paso, Robinson Pl. Rumph. Amb. 179, October 31, 1913, along the seashore, locally known as waringin.

Ficus benjamina Linn., as originally published, manifestly includes more than one species, but I have here followed the current interpretation of it. Varinga parvifolia Rumph. was

quoted as a synonym in the original description of the species, but is not the type.

Two forms are described by Rumphius in this chapter; namely, Varinga parvifolia alta, which is the one figured and here interpreted as Ficus benjamina, and Varinga parvifolia II humilis, smaller in size and with somewhat larger leaves and larger fruits than the former. Blume thought that this might be Ficus haematocarpa Blume, while Hasskarl placed it with doubt under Urostigma neglectum Miq. Its exact status is indeterminable from the data and the material at present available for study.

FICUS TREMATOCARPA Miq. Ann. Mus. Bot. Lugd. Bat. 3 (1867) 224.

Grossularia domestica Rumph. Herb. Amb. 3: 136, t. 87, 88.

AMBOINA, Kati-kati, Robinson Pl. Rumph. Amb. 178, October 7, 1913, in light forests, altitude about 80 meters, locally known as waringin daun alus. I am disposed to refer to the same species Rel. Robins. 1680, 1681, 1682, from Waë, Paso, and Batoe gadjah, all indicated as waringin.

Grossularia domestica Rumph. was erroneously referred by Linnaeus to Ficus racemosa Linn., in Stickman Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 124; the only other suggested reduction is Miquel's doubtful reference of it to Ficus altimeraloo Roxb. The probabilities are very great that it is here correctly referred to Ficus trematocarpa Miq., the type of which was from Amboina, although the status of Miquel's species is doubtful. King has reduced it with several other species, including the Philippine Ficus philippinensis Miq., to Ficus decaisneana Miq., which disposition of it is perhaps correct; but if King's conception of the specific limits be correct, then it is probable that several other described Philippine forms will have to be reduced, such as Ficus inaequifolia Elm., F. confusa Elm., F. driveri Elm., F. setibracteata Elm., and F. magnifica Elm.

FICUS ADENOSPERMA Miq. Ann. Mus. Bot. Lugd. Bat. 3 (1867) 233. Caprificus viridis minor Rumph. Herb. Amb. 3: 152.

AMBOINA, Way tommo, and Roemah tiga, Robinson Pl. Rumph. Amb. 184, 185, August, 1915, along streams at low altitudes, locally known as kaju musor.

The specimens agree fairly well with Rumphius's description and perfectly with that of Miquel. The type of *Ficus adenosperma* Miq. was from Amboina.

FICUS AMPELOS Burm. f. Fl. Ind. (1768) 226 p. p.

Folium politorium vulgare fruticosum Rumph. Herb. Amb. 4: 128. t. 63.

This particular form is not represented in our Amboina collec-

tions, but the plant figured and described by Rumphius is apparently the same as the Javan form currently referred to *Ficus ampelos* Burm. f. The Rumphian description and figure, cited by Burman f. in the original description of *Ficus ampelos* Burm. f., should probably typify the species. It has been reduced to *Ficus politoria* Lam., but Lamarck's species, based on specimens from Madagascar, is certainly distinct from the Malayan form. It has also been erroneously referred to *Ficus parasitica* Roth, and to *F. exasperata* Roxb.

FICUS CORONATA Reinw. ex Blume Bijdr. (1825) 470.

Ficus obscura Blume l. c. 474.

Folium politorium arborescens Rumph. Herb. Amb. 4: 128.

AMBOINA, Kati-kati, Robinson Pl. Rumph. Amb. 183, October 18, 1913, borders of clearings, altitude about 70 meters, locally known as daun plas.

This form, with very scabrid, somewhat inequilateral leaves, certainly represents *Folium politorium arborescens* Rumph. I cannot distinguish it from *Ficus coronata* Reinw. (*F. obscura* Blume). The form described by Rumphius, l. c., as Folium politorium flagellare is probably referable to one or the other of the above species with harsh leaves.

FICUS FORSTENII Miq. Ann. Mus. Bot. Lugd. Bat. 3 (1867) 214, 285. Varinga supa Rumph. Herb. Amb. 3: 135, t. 86?

Nothing resembling this form occurs in our Amboina collections. The figure very strongly resembles both *Ficus pilosa* Reinw. and *F. forstenii* Miq., and the form described by Rumphius is probably referable to one or the other of these species. Miquel thought that it might represent *Urostigma pilosum* Miq.=*Ficus pilosa* Reinw., but it seems to me that it more closely resembles *Ficus forstenii* Miq. Hamilton referred it with doubt to *Ficus gonia* Ham., and Henschel quite wrongly refers it to *Ficus citrifolia* Willd. The form described by Rumphius as Varinga pelal, in the same chapter, may be referable to *Ficus forstenii* Miq. or may represent a different species.

FICUS sp. aff. F. CALOPHYLLA Blume.

Varinga repens Rumph. Herb. Amb. 3: 134, t. 85.

Nothing at all agreeing with *Varinga repens* Rumph. is presented by our Amboina collections. The figure and the description, however, apply closely to the Javan *Ficus calophylla* Blume and the Philippine *Ficus pachyphylla* Merr. and certainly represent a species very closely allied to both and perhaps identical with one of them. *Varinga repens* Rumph. was erroneously reduced by Linnaeus to *Ficus pumila* Linn., in Stickman

Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 124, Syst. ed. 10 (1759) 1315, Sp. Pl. ed. 2 (1763) 1515. Likewise it was erroneously reduced by Lamarck, with doubt, to *Ficus pyrifolia* Lam.; by Vahl to *Ficus rubra* Vahl; and by Blume to *Ficus microcarpa* Linn. f. var. *litoralis* Blume. Miquel thought that it might represent a species allied to *Ficus manok* Miq.

FICUS RECURVA Blume Bijdr. (1825) 457.

Rudens silvaticus parvifolius Rumph. Herb. Amb. 5:80, t. 43, f. 2.

From the description and figure I have little doubt in referring this to *Ficus recurva* Blume. A more comprehensive exploration of Amboina, however, may yield material that will modify this reduction.

FORMS OF FICUS, DESCRIBED BY RUMPHIUS, OF DOUBTFUL STATUS

Grossularia domestica longifolia Rumph. Herb. Amb. 3: 136. Grossularia domestica parvifolia Rumph. Herb. Amb. 3: 136.

Both are perhaps forms of *Ficus trematocarpa* Miq. to which *Grossularia domestica* Rumph. pertains.

Varinga funicularis Rumph. Herb. Amb. 3: 137.

Varinga nounouck Rumph. Herb. Amb. 3: 137 (from Madagascar).

Grossularia silvestris Rumph. Herb. Amb. 3: 138, t. 89.

This form was erroneously placed by Lamarck under Ficus racemosa Linn., and by Henschel under Ficus tsjela Ham. Miquel thought that it might be near Ficus albinervia Miq. It is not represented in our Amboina collections.

Arbor eusanda Rumph. Herb. Amb. 3: 141.

Caprificus amboinensis esculenta angustifolia Rumph. Herb. Amb. 3: 146. Apparently a form allied to *Ficus racemifera* Roxb., as interpreted above, and to *F. variegata* Blume.

Caprificus amboinensis esculenta silvestris Rumph. Herb. Amb. 3: 148. Caprificus amboinensis esculenta s. hahuol altera Rumph. Herb. Amb. 3: 148.

Caprificus s. sycomorus chartaria (amboinensis) Rumph. Herb. Amb. 3: 149.

Caprificus s. sycomorus chartaria (javanica) Rumph. Herb. Amb. 3: 149. Caju djurang (e Java) Rumph. Herb. Amb. 3: 151.

Ficus septica silvestris Rumph. Herb. Amb. 3: 154.

Ficus septica angustifolia Rumph. Herb. Amb. 3: 154.

The last two are perhaps merely forms of *Ficus septica* Burm. f. (*Ficus leucantatoma* Poir.) as interpreted above, to which *Ficus septica* Rumph. pertains.

Rudens silvaticus latifolius Rumph. Herb. Amb. 5: 80, t. 43. f. 1.

A scandent fig, apparently belonging in the group with Ficus recurva Blume.

Rudens silvaticus rugosus Rumph. Herb. Amb. 5: 81.

Manifestly a species of *Ficus* and apparently belonging in the same group as the above.

Rudens silvaticus IV Rumph. Herb. Amb. 5: 80.

Probably a species of Ficus, and perhaps the same plant as that very

briefly described as Gummi susu Rumph., Herb. Amb. 5: 43.

This list of indeterminable *Ficus* described by Rumphius, for the most part comprises those forms that are very inadequately described. Later some of them may be placed from the study of more specimens and data than are now available, but the list, from the standpoint of nomenclature and synonymy, is of no importance.

CONOCEPHALUS Blume

CONOCEPHALUS AMBOINENSIS (Zipp.) Warb. in Engl. Bot. Jahrb. 18 (1894) 189.

Poikilospermum amboinense Zipp. ex Miq. Ann. Mus. Bot. Lugd. Bat. 1 (1863-64) 203.

Funis muraenarum latifolia Rumph. Herb. Amb. 5: 68, t. 36.

AMBOINA, Way tommo, Lateri, and Negri lama, Robinson Pl. Rumph. Amb. 170, 172, August, 1913, climbing over trees at low and medium altitudes; probably referable here also is Robinson Pl. Rumph. Amb. 171, from Hitoe lama, November 6, 1913, altitude about 75 meters.

Linnaeus, in Stickman Herb. Amb. (1854) 19, Amoen. Acad. 4 (1759) 129, erroneously referred plate 36, as Funis convolutus Rumph., to Melastoma octandrum Linn., doubtless by confusion with the species of Medinilla figured on the preceding plate. Hasskarl, Neue Schlüssel (1866) 96, quotes Teysmann's opinion that the species figured represents a species of Conocephalus. I can see no reason for considering it other than Conocephalus amboinensis Warb., which was originally described by Zippel from Amboina material as a monotypic genus, Poikilospermum amboinense Zipp.

CANNABIS Linnaeus

CANNABIS SATIVA Linn. Sp. Pl. (1753) 1027.

Cannabis indica Lam. Encycl. 1 (1785) 695.

Cannabis indica Rumph. Herb. Amb. 5: 208, t. 77, f. 1.

Cannabis indica tertia Rumph. Herb. Amb. 5: 211, t. 77, f. 2.

The plant figured and described by Rumphius as *Cannabis indica* is manifestly the common hemp. It was reduced by Linnaeus to *Cannabis sativa* Linn., in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, but by several of the early authors, following Lamarck, was cited under *Cannabis indica* Lam., a synonym of *C. sativa* Linn. Hasskarl, Neue Schlüssel (1866) 112, makes *Cannabis indica tertia* Rumph. the type of a new variety, *Cannabis sativa* Linn. var. *crispata* Hassk., which, however, is apparently merely a variant of the common hemp.

URTICACEAE

LAPORTEA * Gaudichaud

LAPORTEA AMPLISSIMA (Blume) Miq. Fl. Ind. Bat. 1 ² (1858) 232, Ann. Mus. Bot. Lugd. Bat. 4 (1869) 301.

Urera amplissima Blume Mus. Bot. 2 (1859) f. 22 (without description).

Folium urens latifolium Rumph. Herb. Amb. 3: 217, t. 141.

AMBOINA, Lateri, Soja, Negri lama, and Halong, Robinson Pl. Rumph. Amb. 310, 311, 312, 313, August and September, 1913, in forests and along rocky river banks, altitude 175 to 325 meters, locally known as polat, polot, and polat puti.

Burman f., Fl. Ind. (1768) 205, referred this to Croton polot Burm. f., taking his specific name from Rumphius, but describing the species from Javan material. Burman's species has been entirely overlooked by modern botanists and is the species commonly known as Claoxylon indicum Hassk., which should now be called Claoxylon polot (Burm. f.) (Croton polot Burm. f., Claoxylon indicum Hassk.). Henschel, followed by Pritzel, erroneously referred the Rumphian species to Jatropha moluccana Linn.=Aleurites moluccana Willd. Hasskarl, Neue Schlüssel (1866) 69, referred it to Laportea crenulata Gaudich., where it certainly does not belong, although he was correct as to the genus. In the original publication of Urera amplissima Blume no description is given; the name appears on the plate only. Miguel credits it to Java (Teysmann) and the Moluccas (Zippel), but in his second consideration of it he cites only Amboina material collected by Teysmann, Zippel, and De Fretes, so that the original citation of Teysmann's specimen, as Javan, is probably an error. J. J. Smith † states: "De voor Java opgegeven L. amplissima Mig. is nog niet op Java aangetroffen. doch waarschijnlijk afkomstig van de Molukken."

LAPORTEA sp.

Folium urens angustifolium Rumph. Herb. Amb. 3: 217. Folium urens rubrum Rumph. Herb. Amb. 3: 218.

Both descriptions apparently apply to a single species of *Laportea*, which, from the data given by Rumphius, is perhaps distinct from *Laportea amplissima* Miq. Hasskarl, Neue Schlüssel (1866) 69, thought that *Folium urens rubrum* Rumph.

^{*} Retained name, Vienna Code; Urticastrum Fabr. (1759) is older.

[†] Koorders & Valeton Bijdr. Boomsoorten Java 12 (1910) 676.

might be Laportea stimulans Miq. No. 310, cited above under Laportea amplissima Miq., was considered by Doctor Robinson certainly to represent Folium urens rubrum Rumph., and if this be correct, then this form described by Rumphius becomes a synonym of Laportea amplissima Miq. The leaf measurements given by Rumphius for all three forms are matched by some of the leaves on the specimens cited above.

LAPORTEA DECUMANA (Roxb.) Wedd. Monogr. Urt. (1856) 127.

Urtica decumana Roxb. Hort. Beng. (1814) 67, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 587.

Urtica rumphii Kostel. Allgem. Med.-Pharm. Fl. 2 (1833) 400 (type!). Urtica decumana Rumph. Herb. Amb. 6: 47, t. 20, f. 1.

AMBOINA, Halong and Hitoe lama, Robinson Pl. Rumph. Amb. 316, September and October, 1913, along streams and in forests from near sea level to an altitude of 250 meters, locally known as daun gattal puti and daun gattal mera.

This was originally reduced by Linnaeus, through error, to Urtica interrupta Linn., in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134. It has been cited by several authors under Fleurya interrupta Gaudich., but the figure does not pertain to this species, and the description only as to Urtica decumana III vulgaris; see below. Roxburgh cites the Rumphian description and figure in the original description of Urtica decumana Roxb., which was based on specimens introduced into the Calcutta Botanic Garden from the Moluccas. The Rumphian figure and description are the basis of Urtica rumphii Kostel. The figure is exceedingly poor, but it manifestly belongs with this species rather than with Fleurya interrupta Gaudich. I consider that the forms described by Rumphius as I alba and II rubra represent Laportea decumana (Roxb.) Wedd. as here interpreted.

FLEURYA Gaudichaud

FLEURYA INTERRUPTA (Linn.) Gaudich. Bot. Freyc. Voy. (1826) 497.

Urtica interrupta Linn. Sp. Pl. (1753) 985.

Urtica decumana III vulgaris Rumph. Herb. Amb. 6: 48.

AMBOINA, Robinson Pl. Rumph. Amb. 319, July 19, 1913, in waste places, town of Amboina, locally known as daun gattal.

There is very little doubt as to the correctness of this reduction of *Urtica decumana vulgaris* Rumph. The other plants described in the same chapter, *Urtica decumana alba* and *rubra*, are apparently both *Laportea decumana* Wedd.

PELLIONIA Gaudichaud

PELLIONIA SINUATA (Blume) Boerl. Handl. Kenn. Fl. Nederl. Ind. 3 (1900) 375.

Procris sinuata Blume Bijdr. (1825) 511.

Elatostema sinuatum Hassk. Cat. Hort. Bogor. (1844) 79.

Macuerus mas Rumph. Herb. Amb. 6: 133, t. 58, f. 2.

AMBOINA, Ayer putri, Robinson Pl. Rumph. Amb. 320, July 28, 1913, on coral rocks at low altitudes.

The only previously suggested identification of *Macuerus mas* is Hasskarl's doubtful reference of it to *Elatostema macro-phyllum* Brongn., Neue Schlüssel (1866) 174. It is certainly not Brongniart's species, but is *Pellionia sinuata* Boerl., at least as that species is interpreted by Robinson, in Philip. Journ. Sci. 5 (1910) Bot. 497.

BOEHMERIA Jacquin

BOEHMERIA NIVEA (Linn.) Gaudich. Bot. Freyc. Voy. (1826) 499.

Urtica nivea Linn. Sp. Pl. (1753) 985.

Ramium majus Rumph. Herb. Amb. 5: 214, t. 79. f. 1.

The plant figured and described is a form of ramie, probably typical *Boehmeria nivea* Gaudich., although possibly the variety tenacissima (Gaudich.) Miq. It was first reduced by Linnaeus to *Urtica nivea* Linn., in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Sp. Pl. ed. 2 (1763) 1398, and has been cited by various authors under *Procris nivea* Gaudich. and *Boehmeria tenacissima* Gaudich., synonyms of *Boehmeria nivea* Gaudich. Burman f., Fl. Ind. (1768) 197, erroneously referred it to *Urtica aestuans* Linn. in which he was followed by Lamarck, Persoon, and Henschel.

POUZOLZIA Gaudichaud

POUZOLZIA ZEYLANICA (Linn.) Benn. Pl. Jav. Rar. (1838) 67.

Parietaria zeylanica Linn. Sp. Pl. (1753) 1052.

Parietaria indica Linn. Mant. 1 (1767) 128.

Pouzolzia indica Gaudich. Bot. Freyc. Voy. (1826) 503.

Herba memoriae Rumph. Herb. Amb. 6: 29, t. 12, f. 2.

AMBOINA, Batoe merah and vicinity of the town of Amboina, *Robinson Pl. Rumph. Amb. 324*, 325, July, 1913, in sago swamps and along road-sides at low altitudes.

Herba memoriae Rumph. is manifestly a form of Pouzolzia indica (Linn.) Benn. Burman f., Fl. Ind. (1768) 221, refers it to Parietaria indica Burm. f., published independently of P. indica Linn. It has been cited as a synonym of Pouzolzia indica Gaudich. by several authors, for example, Presl, Bennett, Blume,

and Miquel, but is here placed under what is manifestly its oldest valid specific name, *Pouzolzia zeylanica* (Linn.) Benn. Roxburgh, Fl. Ind. ed. 2, 3 (1832) 583, erroneously cites the Rumphian illustration under *Urtica tuberosa* Roxb.=*Pouzolzia tuberosa* Wight.

PIPTURUS Weddell

PIPTURUS ARGENTEUS (Forst.) Wedd. in DC. Prodr. 16 1 (1869) 235 19.

Urtica argentea Forst. Prodr. (1786) 65.

Morus paniculata Roxb. Hort. Beng. (1814) 67 (type!).

Perlarius I Rumph. Herb. Amb. 4: 120, t. 56.

AMBOINA, Lateri, Batoe merah, and Amahoesoe, Robinson Pl. Rumph. Amb. 317, 318, July and August, 1913, in forests and thickets on limestone formations, altitude 20 to 150 meters, locally known as daun kes and daun kesi.

Perlarius as figured and described by Rumphius is the whole basis of Morus paniculata Roxb. as originally published in the Hortus Bengalensis (1814) 67 by citation of the Rumphian figure; see C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 414. Roxburgh's species, later described from material originating in the Moluccas, Fl. Ind. ed. 2, 3 (1832) 599, has been reduced to Pipturus velutinus Wedd.=P. incanus (Blume) Wedd., a species difficult to distinguish from P. argenteus Wedd.; but wherever placed, it will in turn place the synonyms Pipturus paniculatus Miq. and Botrymorus paniculata Miq. If, however, a critical revision of the genus should show that the Amboina material is Pipturus incanus Wedd. rather than P. argenteus Wedd., then Roxburgh's specific name will take precedence over Pipturus incanus Wedd.

Perlarius latifolius, described in this chapter, is Robinsoniodendron ambiguum Merr. (see p. 204). Perlarius parvifolius
may be a variant of Pipturus argenteus Wedd. or may refer to
some entirely different genus and species; its status is quite
uncertain.

PIPTURUS REPANDUS (Blume) Wedd. in Arch. Mus. Paris 9 (1857) 448.

Urtica repanda Blume Bijdr. (1825) 501.

Aylaun nya femina Rumph. Herb. Amb. 5: 67.

Amboina, Batoe gadjah and Batoe merah River, Robinson Pl. Rumph. Amb. 321, 322, August, 1913, climbing over trees, ascending to an altitude of 250 meters.

Aylaun nya femina Rumph. is described in the chapter with Funis muraenarum=Medinilla. The description is poor, but so far as it goes it applies fairly closely to the specimens here referred to Pipturus repandus Wedd.

OREOCNIDE Miquel

(Villebrunea Gaudichaud)

OREOCNIDE RUBESCENS (Blume) Miq. Ann. Mus. Bot. Lugd. Bat. 4 (1869) 306.

Urtica rubescens Blume Bijdr. (1825) 506.

Villebrunea rubescens Blume Mus. Bot. 2 (1856) 167.

Lignum aquatile Rumph. Herb. Amb. 4:135, t. 70.

AMBOINA, Batoe merah River, Robinson Pl. Rumph. Amb. 315, September 24, 1913, on river banks, altitude about 40 meters.

Hasskarl, Neue Schlüssel (1866) 86, thought that Lignum aquatile Rumph. might be Oreocnide major Miq. or O. silvatica Miq.; according to J. J. Smith the former is a synonym of Villebrunea rubescens Blume=Oreocnide rubescens Miq., and the latter is a variety of it. The Amboina specimens, which agree closely with the figure, but not very well with the description, appear to be fairly typical of Oreocnide rubescens Miq. Rumphius's description is short and rather poor and may include more than this species.

As to the genera *Oreocnide* Miquel and *Villebrunea* Gaudichaud, on a strict interpretation the former has priority; see C. B. Robinson in Philip. Journ. Sci. 6 (1911) Bot. 16.

ROBINSONIODENDRON genus novum

Genus Maoutiae affinis, differt perianthium odistincte evolutum. 5-denticulatum.

ROBINSONIODENDRON AMBIGUUM (Wedd.) comb. nov.

Maoutia ambigua Wedd. in Arch. Mus. Paris 8 (1855-56) 483; DC. Prodr. 16¹ (1869) 235³³.

Perlarius I latifolius Rumph. Herb. Amb. 4: 120.

AMBOINA, Batoe merah, Robinson Pl. Rumph. Amb. 214, August 24, 1913, on hillsides at low altitudes.

The specimen cited above agrees perfectly with Rumphius's description, as well as with that of *Maoutia ambigua* Wedd., a species known only from Amboina and anomalous in the genus by its distinctly developed pistillate perianth. No previous reduction of *Perlarius I latifolius* Rumph. has been suggested, other than Hasskarl's opinion that it might be a variety of *Perlarius I*, that is, *Pipturus argenteus* Wedd.

In view of the fact that the species is anomalous in *Maoutia*, where it was placed by Weddell, it seems best to establish another genus for it; in *Maoutia* the pistillate perianth is wanting. The generic name I have proposed is selected in

commemoration of Doctor Robinson's work in Amboina and of his critical work on the Philippine representatives of this difficult family.*

PROTEACEAE

HELICIA Loureiro

HELICIA SERRATA (R. Br.) Blume in Ann. Sci. Nat. II 1 (1834) 215.

Rhopala serrata R. Br. in Trans. Linn. Soc. 10 (1811), 193.

Arbor vespertilionum Rumph. Herb. Amb. 7: 17 (p. p., excl. t. 10!). Amboina, Paso, Robinson Pl. Rumph. Amb. 281, October 29, 1913, near the seashore.

Arbor vespertilionum Rumph. was first reduced to Helicia serrata by Blume, in Ann. Sci. Nat. II 1 (1834) 215. He included also t. 10 with the statement "figura male expressa." The figure is manifestly no Helicia, refers to Arbor vespertilionum II described on page 17 following the description that does apply to Helicia, and is Schizomeria serrata Hochr. (see p. 244).

LORANTHACEAE

LORANTHUS Linnaeus

LORANTHUS RUMPHII sp. nov. § Heteranthus.

Viscum amboinicum album Rumph. Herb. Amb. 5:60, t. 33.

AMBOINA, Batoe gadjah and Soja road, Robinson Pl. Rumph. Amb. 517 (type), August 4, 1913; Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 516, August 23, 1913, parasitic, altitude 50 to 200 meters, locally known as bunga manumpang and daun manumpang.

Frutex parasiticus glaber, ramis ramulisque tenuibus, teretibus; foliis oppositis, petiolatis, coriaceis, oblongis ad anguste oblongo-obovatis, obtusis, basi attenuatis, usque ad 8 cm longis, nervis utrinque 3 vel 4, obscuris vel subobsoletis, adscendentibus; inflorescentiis axillaribus, solitariis, usque ad 2 cm longis; floribus cylindraceis, teretibus, gracilis, circiter 2.4 cm longis, 5- vel 6-meris, omnibus sessilibus, in triadibus vel diadibus breviter pedunculatis racemose dispositis.

A parasitic, entirely glabrous shrub, the branches elongated, up to at least 70 cm in length, slender, terete, reddish-brown or dark in color when dry, the younger ones somewhat compressed at the nodes, smooth, the internodes 2 to 4 cm in length. Leaves opposite, coriaceous, olivaceous and rather dull when dry, oblong to narrowly oblong-obovate, 5 to 8 cm long, 1.5 to 3 cm wide, apex rounded to obtuse, base gradually narrowed, attenuate

^{*} Philippine Urticaceae. *Philip. Journ. Sci.* 5 (1910) *Bot.* 465-543; 6 (1911) *Bot.* 1-33, *t.* 1-3; Philippine Urticaceae II, *ibid.* 299-314.

or cuneate; lateral nerves 3 or 4 on each side of the midrib, ascending, slender, obscure, sometimes nearly obsolete; petioles about 8 mm long. Inflorescences axillary, solitary, about 2 cm long, the flowers slender, about 2.4 cm long, cylindric, orange below, yellowish above, 5- or mostly 6-merous, in racemosely arranged triads, the rachis slender, the lateral branchlets bearing the sessile flowers 2 to 4 mm long. Calyx cylindric-ovoid, 2 to 3 mm long, truncate, the subtending bracts broadly ovate, rounded or obtuse, about 1.2 mm long, all the flowers sessile, usually in threes, sometimes in pairs at the apex of each short lateral branch. Petals free to the base, linear, about 1 mm wide, the reflexed portion above the insertion of the filament linear, 6 to 7 mm long. Filaments 4 mm long, the anthers continuous, linear, about 1.2 mm in length. Fruit narrowly ovoid, when dry black and about 6 mm long.

This species is possibly allied to *Loranthus indicus* Desr., but it differs in many characters, notably in its smaller leaves, longer petioles, and shorter, fewer-flowered inflorescences. The type of *Loranthus indicus* Desr. was a specimen collected by Sonnerat in "lés Indies orientales," but de Candolle, Prodr. 4 (1830) 305, credits it to Timor. Miquel, Fl. Ind. Bat. 1¹ (1856) 820, thought that *Viscum amboinicum album* Rumph. represented a species of *Dendrophthoë* (*Loranthus*) near *D. indica* (Desr.) Miq. or *D. incarnata* (Jack) Miq., but the Rumphian species is no *Dendrophthoë*, as indicated by its entirely free petals.

Viscum amboinicum III Rumph. Herb. Amb. 5:62, very briefly described, is undoubtedly a species of *Loranthus*, but its status cannot be definitely determined from any data at present available. Hasskarl, Neue Schlüssel (1866) 95, thought it might be the same as *Macrosolen macrophyllus* Miq. (*Loranthus macrophyllus* Korth.), but this is entirely improbable, as that species is known only from Sumatra.

ELYTRANTHE Blume

ELYTRANTHE AMBOINENSIS sp. nov.

Viscum amboinicum rubrum Rumph. Herb. Amb. 5: 61?

Amboina, Hoetoemoeri road, Robinson Pl. Rumph. Amb. 515 (type), September 30, 1913, on Barringtonia trees, altitude about 350 meters, locally known as manumpang.

Frutex epiphyticus glaber, ramis crassis, ramulisque teretibus; foliis oppositis, coriaceis, nitidis, oblongo-ovatis, usque ad 18 cm longis, obtuse acuminatis, basi acutis ad subrotundatis, nervis utrique circiter 8, tenuibus, obscuris; inflorescentiis

axillaribus, solitariis vel fasciculatis, brevibus, pedunculis 2- ad 4-floris, circiter 5 mm longis; floribus 6-meris, circiter 2.5 cm longis, corollae tubo sursum prominente 6-angulato, bracteis late ovatis, circiter 1.5 mm longis, bracteolis paullo minoribus, connatis, integris vel retusis.

A stout, parasitic, glabrous shrub, the branches up to at least 60 cm in length, terete, brownish, somewhat lenticellate, the branchlets smooth, reddish-brown. Leaves opposite, thickly coriaceous, rather pale-greenish when dry, shining, oblong-ovate, or some of the smaller ones oblong-lanceolate, 14 to 18 cm long. 4 to 7 cm wide, base acute to subrounded, apex shortly and broadly blunt-acuminate; lateral nerves about 8 on each side of the midrib, slender, anastomosing, more prominent on the upper than on the lower surface, the reticulations lax; petioles stout, 1 to 1.5 cm long. Inflorescence axillary, of solitary or fascicled, short peduncles up to 5 mm in length, each peduncle bearing at its apex from 2 to 4 short-pedicelled flowers, the peduncles 5 mm long or less, the pedicels about 2 mm in length. Flowers 6-merous, about 2.5 cm long, dark-red below, each subtended by one bract which is broadly ovate, acute, about 1.5 mm long, the bracteoles entirely united or slightly retuse at the apex, nearly as large as the bract. Calyx cylindric, truncate, about 5 mm long. Corolla-tube about 6 mm long, inflated, prominently 6-angled or narrowly 6-winged in the upper one-third, the lobes 6, about 3 mm wide at the base, abruptly narrowed, about 14 mm long and 2 mm wide, thick, acute, spreading or reflexed. Filaments about 6 mm long, attached near the base of the lobes, the anthers continuous, linear, about 4 mm long.

This species is sufficiently well characterized by its opposite, shining, rather large leaves, and especially by its axillary, solitary or fascicled, very short, 2- to 4-flowered peduncles. In *Elytranthe* it is distinguished by its bracteoles being either entirely connate into a single one nearly as large as the bract, or at most merely retuse at the apex.

It is by no means certain that the plant here described represents Viscum amboinense rubrum of Rumphius, as his short description does not well conform. Rumphius compares his plant with Viscum amboinicum album = Loranthus rumphii Merr., with which the present species has little in common. Viscum amboinense rubrum, moreover, was parasitic on small trees near the seashore, while Elytranthe amboinensis grows at an altitude of about 350 meters. Hasskarl, Neue Schlüssel (1866) 95, suggests that Viscum amboinicum rubrum may be the same as Macrosolen evenius (Blume) Miq. = Loranthus

evenius Blume, but in view of the characters of that species and its known distribution this proposed reduction is probably incorrect.

SANTALACEAE

SANTALUM Linnaeus

SANTALUM ALBUM Linn. Sp. Pl. (1753) 349. Sandalum Rumph. Herb. Amb. 2: 42, t. 11.

The form described by Rumphius as Sandalum is probably the true sandal wood, Santalum album Linn., at least for most part. Sandalum was first reduced by Linnaeus, in Stickman Herb. Amb. (1754) 8, Amoen. Acad. 4 (1759) 120, Syst. ed. 10 (1759) 1000, Sp. Pl. ed. 2 (1762) 497, to Santalum album Linn., which disposition of it has been very generally accepted by succeeding authors. Poiret, in Lamarck Encycl. 6 (1804) 502, suggested that it might be Sirium myrtifolium Linn., which is generally cited as a synonym of Santalum album Linn. Probably referable here is the form from Celebes indicated by Rumphius as Sandalum radicis Herb. Amb. 2: 46, but there is less reason for considering Lignum papuanum III Rumph., l. c. 58, as being identical with Santalum album Linn. as Henschel indicates; see Hasskarl, Neue Schlüssel (1866) 28.

EXOCARPUS LaBillardière

EXOCARPUS EPIPHYLLANTHUS (Linn.) comb. nov.

Phyllanthus epiphyllanthus Linn. Amoen. Acad. 4 (1759) 136, Syst. ed. 10 (1759) 1264 (type!), non Sp. Pl. ed. 2 (1763) 1392.

Xylophylla longifolia Linn. Mant. 2 (1771) 221 (type!).

Phyllanthus ceramicus Pers. Syn. 2 (1807) 591 (type!).

Exocarpus ceramicus R. Br. ex. Spreng. Gesch. 2 (1818) 77; Hensch. Vita Rumph. (1833) 201.

Exocarpus phyllanthoides Endl. Prodr. Fl. Norfolk. (1833) 46?

Exocarpos ceramica A. DC. Prodr. 14 (1857) 691 (type!).

Xylophyllos ceramica Rumph. Herb. Amb. 7: 19, t. 12.

The present application of *Phyllanthus epiphyllanthus* Linn. is entirely contrary to accepted usage, yet it is unquestionably the correct interpretation of the species. In the Amoen. Acad. 4 (1759) 136, Linnaeus quotes the Rumphian illustration with doubt, but in the same year, Syst. ed. 10 (1759) 1264, he adds a description which is based wholly on Rumphius, as follows: "*Phyllanthus epiphyllanthus*. 2. P. fol. lanceolatis serratis; crenis floriferis. Rumph. amb. 7. t. 12." However, in the second edition of his Species Plantarum (1763) 1392, he discards the Rumphian synonym, adds various others, and describes a plant, a true *Phyllanthus*, from American material. Still later, Mant. 2

(1771) 221, apparently recognizing his error, he proposed a new name for *Phyllanthus epiphyllanthus* of the second edition of the Species Plantarum, calling it *Xylophylla latifolia* Linn. A. de Candolle, Prodr. 14 (1857) 691, considers that *Exocarpos ceramica* A. DC. is distinct from *E. phyllanthoides* Endl., but apparently saw no specimens of the former. *Exocarpus rolfeanus* (O. Kuntze) Merr., in Philip. Journ. Sci. 4 (1910) Bot. 352, is certainly very closely allied to *E. epiphyllanthus* (Linn.) Merr. and may have to be reduced to it. Of the names discussed above, *Xylophylla longifolia* Linn., *Phyllanthus epiphyllanthus* Linn., as originally published, *Phyllanthus ceramicus* Pers., and *Exocarpus ceramicus* R. Br. and of A. de Candolle must all be interpreted from the Rumphian figure and description.

OLACACEAE

XIMENIA Linnaeus

XIMENIA AMERICANA Linn. Sp. Pl. (1753) 1193.

Zizyphus littorea Teysm. ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 176 (type!).

Vidara littorea Rumph. Herb. Amb. 2: 119, t. 37.

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 260, October 31, 1913, in thickets back of the beach.

Vidara littorea Rumph. has not before been definitely placed; it is unquestionably the widely distributed strand plant, Ximenia americana Linn. It was reduced by Linnaeus, with doubt, to Rhamnus napeca Linn., in Amoen. Acad. 4 (1759) 121. Loureiro, Fl. Cochinch. (1790) 158, discusses it under Rhamnus soporifer Lour.=Zizyphus soporifera Schultes. Hamilton, Mem. Wern. Soc. 6 (1832) 322, expresses the opinion that it is nearer to Elaeagnus than to Zizyphus, and Teysmann thought it a distinct species of Zizyphus which he called Zizyphus littorea, and which was published by Hasskarl, in Abh. Naturf. Gesellsch. Halle 9 (1866) 176 (Neue Schlüssel 34). Of the names cited above, but a single one, Zizyphus littorea Teysm., is typified by the Rumphian figure, and this name is not listed in Index Kewensis.

ARISTOLOCHIACEAE

ARISTOLOCHIA Linnaeus

ARISTOLOCHIA RUMPHII Kostel. Allg. Med.-Pharm. Fl. 2 (1833) 465 (type!).

Radix puluronica (s. Peponaster minor) Rumph. Herb. Amb. 5: 476, t. 177.

This species is not represented in our Amboina collections.

144971—14

Radix puluronica was originally reduced by Linnaeus to Aristolochia indica Linn., in Stickman Herb. Amb. (1754) 25, Amoen. Acad. 4 (1759) 133, Syst. ed. 10 (1759) 1249, in which he was followed by Loureiro, Henschel, and Pritzel, and, with doubt, by Duchartre, in DC. Prodr. 15 1 (1864) 479; this species, however, is definitely known only from India and Ceylon. I have here listed the Rumphian species under Aristolochia rumphii Kostel., of which it is the type, as it does not appear to be referable to any of the well-known Malayan species; such as Aristolochia tagala Cham., A. timoriensis Decne., A. gaudichaudii Duch., and A. zollingeri Miq.

ARISTOLOCHIA sp.

Peponaster major Rumph. Herb. Amb. 5: 474.

Hasskarl, Neue Schlüssel (1866) 149, thought that this might be the same as Aristolochia hastata Jack, but there is little reason to consider that this reduction is correct, as Jack's species is known only from Sumatra. It might be the very imperfectly described Aristolochia longifolia Roxb. (A. moluccana Duchartre), the type of which was from the Moluccas, or the very widely distributed Aristolochia tagala Cham. (A. roxburghiana Klotz.). Its status can be determined only by a critical study of all the Moluccan species when more abundant material is available.

POLYGONACEAE

RHEUM Linnaeus

RHEUM RHABARBARUM Linn. Sp. Pl. (1753) 372.

Rhabarbarum sinense Rumph. Herb. Amb. 6: 148.

The rather long discussion seems to apply to this Linnean species; the plant itself is not described. Hasskarl, Neue Schlüssel (1866) 177, referred it to *Rheum undulatum* Linn., which is a synonym of *R. rhabarbarum* Linn.

RUMEX Linnaeus

RUMEX PATIENTIA Linn. Sp. Pl. (1753) 333.

Lapathum hortense Rumph. Herb. Amb. 5: 277.

Hasskarl, Neue Schlüssel (1866) 120, suggests that this is Rumex patientia Linn., which is probably the correct disposition of it. The plant is not described by Rumphius, who merely states that it was the same as the European form called Acetosa hispanica, Pathic, or Patientia, that it was cultivated and used in cooking, and that it was known to the Malays as sayor assam.

CHENOPODIACEAE

CHENOPODIUM Linnaeus

CHENOPODIUM QUINOA Willd. Sp. Pl. 1 (1799) 1301.

Blitum peruvianum Rumph. Herb. Amb. 5: 232.

This South American species is briefly discussed. The reduction, made by Hasskarl, to *Chenopodium quinoa* Willd., is probably correct. Rumphius quotes the common name *quinua* for the species he discussed.

SALICORNIA Tournefort

SALICORNIA HERBACEA Linn. Sp. Pl. ed. 2 (1762) 5.

Crithmus indicus III Kaly articulatum Rumph. Herb. Amb. 6: 166.

This reduction follows Hasskarl, which is unquestionably the correct disposition of the European plant that Rumphius briefly discussed.

AMARANTHACEAE

DEERINGIA R. Brown

DEERINGIA AMARANTHOIDES (Lam.) comb. nov.

Achyranthes amaranthoides Lam. Encycl. 1 (1785) 548. Celosia baccata Retz. Obs. 5 (1789) 23.

Deeringia celosioides R. Br. Prodr. (1810) 413.

Deeringia baccata Moq. in DC. Prodr. 13 2 (1849) 236.

Blitum frutescens Rumph. Herb. Amb. 5: 235, t. 83, f. 2.

This widely distributed and well-known species is not represented in our Amboina collections, but Rumphius's excellent figure is unmistakably the form commonly known as Deeringia celosioides R. Br. and as D. baccata Mog., but for which Achyranthes amaranthoides Lam. supplies an older name. Linnaeus, Sp. Pl. ed. 2 (1762) 295, reduced Blitum frutescens Rumph. to Achyranthes muricata Linn.=Digera muricata (Linn.) Mart. The first and only citation in the original place of publication is the one to Rumphius, and this might by some authors be interpreted as the type of the species. However, the Linnean species is manifestly based primarily on an actual specimen and is hence not to be interpreted by the Rumphian reference. Lamarck, realizing that Linnaeus had confused two distinct species under Achyranthes muricata, proposed the name Achyranthes amaranthoides for what is now known as Deeringia baccata Mog., basing his description on specimens collected by Sonnerat, with the reduction of Blitum frutescens Rumph. description applies unmistakably to Deeringia, not to Digera, although Lamarck's species has long been referred to Digera

arvensis Forsk.=D. muricata (Linn.) Mart. Other names involved in the reduction of Blitum frutescens Rumph. are Cladostachys arborescens Don, Cladostachys muricata Moq., and C. frutescens Don; the first two are synonyms of Digera muricata (Linn.) Mart., the last is a synonym of Deeringia amaranthoides (Lam.) Merr.

CELOSIA Linnaeus

CELOSIA ARGENTEA Linn. Sp. Pl. (1753) 205.

Amarantus caudatus Rumph. Herb. Amb. 5: 237.

Amboina, Koesoekoesoe sereh and town of Amboina, Robinson Pl. Rumph. Amb. 133, August, 1913, in waste places at low altitudes, locally known as bayam blanda.

This reduction was first suggested by Hasskarl, Neue Schlüssel (1866) 115, and I consider it to be the correct disposition of *Amarantus caudatus* Rumph.

CELOSIA CRISTATA Linn. Sp. Pl. (1753) 205.

Amarantus japonicus Rumph. Herb. Amb. 5: 236, t. 84. Amarantus vulgaris Rumph. Herb. Amb. 5: 236.

This commonly cultivated species is not represented in our Amboina collections. Amarantus japonicus Rumph. was originally reduced by Linnaeus to Celosia cristata Linn., in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 493, in which he was followed by numerous authors, and which is certainly the correct disposition of it. In the second edition of the Species Plantarum, however, (1762) 297, he referred it to Celosia castrensis Linn., a synonym of Celosia cristata Linn. Hasskarl, Neue Schlüssel (1866) 114, refers Amarantus japonicus Rumph. to Celosia cristata Linn. var. splendens Moq., and Amarantus vulgaris to Celosia cristata Linn. var. exaltata Hassk.

AMARANTHUS Linnaeus

AMARANTHUS VIRIDIS Linn. Sp. Pl. ed. 2 (1763) 1405.

Blitum indicum domesticum Rumph. Herb. Amb. 5: 231, t. 82, f. 1.

Blitum indicum I album Rumph. Herb. Amb. 5: 231.

Blitum indicum II maculosum Rumph. Herb. Amb. 5: 231.

Blitum indicum II maculosum amboinicum Rumph. Herb. Amb. 5: 231.

AMBOINA, Robinson Pl. Rumph. Amb. 139, August 20, 1913, in waste places, locally known as bayang. Also Rel. Robins. 2513, 2514 from Bali, July 7, 1913.

Blitum indicum Rumph., including both forms figured by Rumphius on plate 82, was reduced by Linnaeus to Amaranthus tristis Linn., in Stickman Herb. Amb. (1754) 21, Amoen. Acad.

4 (1759) 130, Syst. ed. 10 (1759) 1268, Sp. Pl. ed. 2 (1763) 1404, in which he was followed by various authors—Lamarck, Loureiro, Willdenow, Burman f., and others. The form described and figured appears to me to be Amaranthus viridis Linn. Blitum indicum I album Rumph. has also been reduced to Amaranthus polygamus Linn. by numerous authors, to Amaranthus oleraceus Linn., and to Euxolus polygamus Moq.

AMARANTHUS GANGETICUS Linn. Syst. ed. 10 (1759) 1268.

Blitum indicum IV terrestre Rumph. Herb. Amb. 5: 232, t. 82, f. 2? Amboina, Way tommo, Robinson Pl. Rumph. Amb. 136, August 16, 1913, locally known as baya.

The specimen cited appears to represent a dwarfed form of *Amaranthus gangeticus* Linn. and agrees fairly well with the figure cited. *Blitum indicum IV terrestre* Rumph. has been very generally reduced to *Amaranthus tristis* Linn.

AMARANTHUS SPINOSUS Linn. Sp. Pl. (1753) 991.

Blitum spinosum Rumph. Herb. Amb. 5: 234, t. 83, f. 1.

Amboina, Robinson Pl. Rumph. Amb. 137, 138, August, September, 1913, along road sides at low altitudes.

The form cited above certainly represents *Blitum spinosum* Rumph., but is not typical *Amaranthus spinosus* Linn., differing from it in its smaller flowers and in its few, scattered, short spines. The reduction was first made by Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1269, Sp. Pl. ed. 2 (1763) 1407, which disposition of it has been accepted by all authors. The figure is poor and is very greatly reduced in size.

The form from Macassar, Celebes, very briefly described as *Blitum spinoṣum e Macassar* Rumph., Herb. Amb. 5: 234, is probably the typical, robust form of *Amaranthus spinosus* Linn.

AMARANTHUS TRICOLOR Linn. Sp. Pl. (1753) 989.

Amarantus versicolor Rumph, Herb. Amb. 5: 237. Blitum indicum III rubrum Rumph, Herb. Amb. 5: 232?

The description of *Amarantus versicolor* applies unmistakably to the rather robust form with variegated and variously colored leaves found in cultivation in many typical countries. The species has been reduced by various authors to *Amaranthus gangeticus* Linn. and to *A. melancholicus* Linn., but *Amaranthus tricolor* Linn. has priority. The reduction of the form that Rumphius described was first made by Henschel. The form foliis obscure rubentibus described in this chapter by Rumphius probably also belongs here.

CYATHULA Loureiro

CYATHULA PROSTRATA (Linn.) Blume Bijdr. (1825) 549.

Achyranthes prostrata Linn. Sp. Pl. ed. 2 (1762) 296. Cyathula geniculata Lour. Fl. Cochinch. (1790) 102. Auris canina I femina Rumph. Herb. Amb. 6: 26, t. 11.

AMBOINA, Robinson Pl. Rumph. Amb. 135, near the town of Amboina in a sago swamp at low altitude.

Auris canina I femina Rumph. was originally reduced by Linnaeus to Achyranthes lappacea Linn., in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 942, but recognizing his error, he later, Sp. Pl. ed. 2 (1762) 296, cites it in the original description of Achyranthes prostrata Linn.—Cyathula prostrata Blume. This is certainly the correct disposition of it. Other names involved in the reduction are Cyathula geniculata Lour., Desmochaete prostrata R. & S., and Pupalia prostrata Mart., all synonyms of Cyathula prostrata (Linn.) Blume.

AERVA * Forskål

AERVA SANGUINOLENTA (Linn.) Blume Bijdr. (1825) 547.

Achyranthes sanguinolenta Linn. Sp. Pl. ed. 2 (1762) 294.

Illecebrum sanguinolentum Linn. Mant. 2 (1771) 344. Verbena rubra Rumph. Herb. Amb. 7: 60, t. 27, f. 2.

This species is not represented in our Amboina collections. Verbena rubra Rumph. is cited by Linnaeus in the original description of Achyranthes sanguinolenta Linn., but the species was manifestly based on an actual specimen, because of the description added; Verbena rubra Rumph., therefore, cannot be interpreted as the type of the species. This reduction of Verbena rubra Rumph. is certainly the correct disposition of it, and under one or the other of the above synonyms has been accepted by all authors.

ACHYRANTHES Linnaeus

ACHYRANTHES ASPERA Linn. Sp. Pl. (1753) 204.

Auris canina II mas Rumph. Herb. Amb. 6: 27, t. 12, f. 1.

This common and well-known weed is not represented in our Amboina collections. *Auris canina II mas* was originally reduced by Linnaeus to *Achyranthes aspera* Linn., in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, Mant. 2 (1771) 344, which is undoubtedly the correct disposition of it. Other authors, however, have referred it as follows: Lamarck

^{*} Retained name, Vienna Code; Comacum Adans. (1763) is older.

to Achyranthes fruticosa Lam.; Hasskarl to Achyranthes bidentata Blume var. elongata Hassk. and to Achyranthes javanica Mog.

ALTERNANTHERA Forskål

ALTERNANTHERA SESSILIS (Linn.) R. Br. ex R. & S. Syst. 5 (1819) 554.

Gomphrena sessilis Linn. Sp. Pl. (1753) 225.

Illecebrum sessile Linn. Sp. Pl. ed. 2 (1762) 300.

Olus squillarum Rumph. Herb. Amb. 6:37, t. 15, f. 1 (incl. I majus et II minus).

Amboina, Robinson Pl. Rumph. Amb. 134, near the town of Amboina, July and August, 1913, in ditches and in sago swamps at low altitudes.

Linnaeus originally reduced Olus squillarum Rumph. to Gomphrena sessilis Linn., in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 950, which, as Alternanthera sessilis (Linn.) R. Br., is surely the correct disposition of it. Hasskarl, Neue Schlüssel (1866) 158, thought that the description agreed better with Alternanthera nodiflora R. Br. than with A. sessilis R. Br. and that Olus squillarum II minus Rumph. was referable to Alternanthera nodiflora R. Br. var. linearifolia Moq. Alternanthera sessilis R. Br. is not published in the Prodromus (1810) 417, as currently indicated in botanical literature.

GOMPHRENA Linnaeus

GOMPHRENA GLOBOSA Linn. Sp. Pl. (1753) 224.

Flos globosus Rumph. Herb. Amb. 5: 289, t. 100, f. 2.

Flos globosus albus Rumph. Herb. Amb. 5: 290.

· AMBOINA, Negri lama, Robinson Pl. Rumph. Amb. 132, September 8, 1913, in fields at low altitudes, locally known as knop.

This reduction of *Flos globosus* Rumph. was originally made by Linnaeus, in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, is certainly the correct disposition of it, and has been universally accepted by authors who have had occasion to cite Rumphius's illustration and description.

NYCTAGINACEAE

MIRABILIS Rivinus

MIRABILIS JALAPA Linn. Sp. Pl. (1753) 177.

Mirabilis Rumph. Herb. Amb. 5: 253, t. 89.

This commonly cultivated plant is not represented in our Amboina collections. The figure given by Rumphius is an excellent representation of this well-known species. The reduction was first made by Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Sp. Pl. ed. 2 (1762) 252. Seven color forms are included by Rumphius; Hasskarl, Neue Schlüssel (1866) 117, refers one of these to *Mirabilis dichotoma* Linn. and the others to several varieties of *Mirabilis jalapa* Linn.

PISONIA Plumier

PISONIA ALBA Spanoghe in Linnaea 15 (1841) 342.

Olus album Rumph. Herb. Amb. 1: 191, t. 78.

This commonly cultivated tree is not represented in our Amboing collections. The reduction was apparently first suggested by Spanoghe in the original publication of *Pisonia alba* (not seen by me); repeated by Choisy, in DC. Prodr. 13² (1849) 446, as a doubtful synonym; by Hasskarl referred with doubt to Pisonia morindaefolia R. Br.; and in Retzia, 1 (1855) 6, as apparently representing *Pisonia sulvestris* Tevsm. & Binn. The plant described by Rumphius is unmistakably the common and widely cultivated Malayan form with very pale-green or sometimes yellowish-white leaves and is typical Pisonia alba Spanoghe. Whether or not Pisonia alba Spanoghe is specifically distinct from P. sulvestris Teysm. & Binn. is uncertain, but the probabilities are that it is a derived form of P. sylvestris or of a closely allied species, which, through long cultivation, rarely produces flowers or fruits. In the Philippines it is generally known as coles moluco, certainly indicating that it was introduced into the Archipelago from the Moluccas.

PISONIA GRANDIS R. Br. Prodr. (1810) 422.

Olus album insulare Rumph. Herb. Amb. 1: 190, t. 79, f. 1 (excl. fig. A, et descr. fruct.).

No Pisonia, other than the very characteristic P. cauliflora Scheff., is represented in our Amboina collections, but the description given by Rumphius, excluding that of the fruit, is unmistakably applicable to the very large Pisonia that is frequently gregarious on small uninhabited islands in the Malayan and Polynesian regions, especially those frequented by birds, which has been described as Pisonia grandis R. Br. Hasskarl, Neue Schlüssel (1866) 24, suggests that it may be Pisonia sylvestris Teysm. & Binn. which Heimerl considers to be a synonym of Pisonia grandis R. Br.

PISONIA ACULEATA Linn. Sp. Pl. (1753) 1026.

Limonellus funicularis montanus Rumph. Herb. Amb. 5: 25.

This reduction follows Hasskarl's suggestion, Neue Schlüssel (1866) 91, the only objection being that the leaves, as described

by Rumphius, are decidedly larger than is the case with *Pisonia aculeata*. Blume, Bijdr. (1826) 735, places it under his *Pisonia limonella* and takes the specific name from Rumphius, but the actual type was a Javan plant; this is considered by all recent authors to be a synonym of *Pisonia aculeata* Linn. Choisy, in DC. Prodr. 13² (1849) 446, cites the Rumphian name under *Pisonia limonellus* Blume, but t. 16, also cited by him, does not belong with *Limonellus funicularis montanus*, but with *Cudranus amboinensis sylvestris* and is a *Cudrania*.

AIZOACEAE

SESUVIUM Linnaeus

SESUVIUM PORTULACASTRUM Linn. Syst. ed. 10 (1759) 1058, Amoen. Acad. 4 (1759) 136.

Portulaca portulacastrum Linn. Sp. Pl. (1753) 446. Crithmus indicus I ruber Rumph. Herb. Amb. 6: 165, t. 72, f. 1. Crithmus indicus II albus Rumph. Herb. Amb. 6: 165.

This widely distributed strand plant is not represented in our Amboina collections. The reduction of *Crithmus indicus* was first made by Linnaeus, in Stickman Herb. Amb. (1754) 28, as *Portulaca portulacastrum* Linn., which as *Sesuvium portulacastrum* is manifestly the correct disposition of it. Many authors, however, have quoted it under *Sesuvium repens* Rottl., a synonym of *S. portulacastrum* Linn.

The form mentioned as Crithmus indicus III kaly articulatum Rumph. Herb. Amb. 6:166, is manifestly the European Salicornia herbacea Linn., as placed by Hasskarl, Neue Schlüssel (1866) 179. The form described as Crithmus indicus IV portulaca arenosa in the same chapter is apparently Portulaca quadrifida Linn., as placed by Hasskarl, l. c.

PORTULACACEAE

PORTULACA Linnaeus

PORTULACA OLERACEA Linn. Sp. Pl. (1753) 445.

Portulaca indica Rumph. Herb. Amb. 5: 268 (incl. I major sativa, II rubra).

Amboina, near the town of Amboina, Rel. Robins. 223, September 3, 1913, locally known as rumput gelang mera.

The identification of the Rumphian species was made by Hasskarl, Neue Schlüssel (1866) 119, and is certainly the correct disposition of it. It is a widely distributed weed in all warm countries.

PORTULACA QUADRIFIDA Linn. Mant. 1 (1767) 73.

Portulaca indica Rumph. Herb. Amb. 5: 268 (incl. III minima, IV litorea).

Hasskarl, Neue Schlüssel (1866) 119, has reduced both of the above-mentioned forms, *Portulaca indica III* and *IV*, to *P. quadrifida* Linn. A single specimen of the latter occurs in our Amboina collection, *Pl. Rumph. Amb. 222*, from coral rocks at Silali, September 22, 1913. This may be the correct disposition of the Rumphian plants, or they may have been merely forms of the commoner and variable *Portulaca oleracea* Linn.

BASELLACEAE

BASELLA Linnaeus

BASELLA RUBRA Linn. Sp. Pl. (1753) 272.

Basella alba Linn. l. c.

Gandola I alba Rumph. Herb. Amb. 5: 417.

Gandola II rubra Rumph. Herb. Amb. 5: 417, t. 154, f. 2.

The form figured by Rumphius was originally reduced by Linnaeus to Basella rubra Linn., in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 132, which has been accepted by all authors except Loureiro, Fl. Cochinch. (1790) 183, who called it Basella nigra Lour.; the latter is manifestly a synonym of B. rubra Linn. The form described by Rumphius as Gandola alba was placed by Linnaeus, Sp. Pl. ed. 2 (1752) 390, under Basella alba Linn., which has very generally been followed by succeeding authors; it is manifestly the form described by Linnaeus as Basella alba Linn., but which is now reduced to B. rubra Linn., it being manifestly only a variant of that species.

NYMPHAEACEAE

NELUMBIUM Jussieu

NELUMBIUM NELUMBO (Linn.) Druce Bot. Exch. Club (1914) 421.

Nymphaea nelumbo Linn. Sp. Pl. (1753) 511.

Nelumbium speciosum Willd. Sp. Pl. 2 (1799) 1258.

Nelumbo javanica Poir. in Lam. Encycl. 4 (1798) 454.

Nymphaea indica major Rumph. Herb. Amb. 6: 168, t. 73.

Rumphius gives a good figure of the common lotus, this being first reduced by Linnaeus to *Nymphaea nelumbo* Linn., in Stickman Herb. Amb. (1754) 28, Amoen. Acad. 4 (1759) 136, Syst. ed. 10 (1759) 1074, Sp. Pl. ed. 2 (1762) 730. It has been also cited under *Nelumbium speciosum* Willd., the commonly accepted name for the species, and *Nelumbo javanica* Poir., a synonym of *Nelumbium nelumbo* (Linn.) Druce. The several

color forms mentioned on page 169 probably do not pertain to the lotus, but to the genus *Nymphaea*.

NYMPHAEA Linnaeus

NYMPHAEA PUBESCENS Willd. Sp. Pl. 2 (1799) 1154.

Castalia pubescens Blume Bijdr. (1825) 48.

Nymphaea indica minor I vulgaris Rumph. Herb. Amb. 6: 172 p. p. Nymphaea indica minor III buronica Rumph. Herb. Amb. 6: 173.

There is no representative of this genus in our Amboina collections. The color forms of Nymphaea indica major Rumph. are apparently not Nelumbium nelumbo (Linn.) Druce, but are referable here or in part to Nymphaea stellata Willd. Nymphaea indica I vulgaris has been referred by various authors to Nymphaea lotus Linn., N. pubescens Willd., N. rubra Roxb., and N. stellata Linn. The description apparently includes both Nymphaea pubescens Willd. and N. stellata Willd. Nymphaea indica II ceramica, the form figured, is Limnanthemum indicum Griseb. In regard to Nymphaea lotus Linn., the type is manifestly the African form, the original specimen still existing in the Linnean herbarium * where it was examined by Conard.† Fl. Zeyl. 194 was wrongly placed here by Linnaeus as a synonym, and is Nymphaea pubescens Willd.

NYMPHAEA STELLATA Willd. Sp. Pl. 2 (1799) 1153.

Castalia stellata Blume Bijdr. (1825) 49.

Nymphaea indica minor I vulgaris Rumph. Herb. Amb. 6: 172, p. p.

The color forms mentioned by Rumphius, for the most part, are apparently referable to *Nymphaea stellata* Willd. rather than to *Nymphaea lotus* Linn. As to the propriety of the use of *Nymphaea* instead of *Castalia* as the generic name for the water lilies, see Conard in Rhodora 18 (1916) 161.

MENISPERMACEAE

PERICAMPYLUS Miers

PERICAMPYLUS GLAUCUS (Lam.) comb. nov.

Menispermum glaucum Lam. Encycl. 4 (1797) 100 (type!).

Cocculus glaucus DC. Syst. 1 (1818) 521 (type!).

Cocculus incanus Colebr. in Trans. Linn. Soc. 13 (1822) 57, t. 17.

Pericampylus incanus Miers in Ann. Nat. Hist. II 7 (1851) 40; Diels in Engl. Pflanzenreich 46 (1910) 217, cum syn.

Folium lunatum minus Rumph. Herb. Amb. 5: 40, t. 25, f. 1.

Amboina, Hoenoet, Robinson Pl. Rumph. Amb. 486, October 18, 1913, climbing on trees, altitude 200 meters, locally known as binkuang.

^{*} Jackson, B. D. Index to the Linnean Herbarium (1912) 108.

[†] Conard, H. S. The water lilies, a monograph of the genus Nymphaea. Carnegie Inst. Publ. 4 (1905) 194.

Linnaeus originally reduced Folium lunatum minus Rumph. to Menispermum carolinum Linn., in Stickman Herb. Amb. (1754) 18, Amoen. Acad. 4 (1759) 128, Syst. ed. 10 (1759) 992, which is a wholly erroneus disposition of it. Willdenow, Sp. Pl. 4² (1805) 825, with equal error, placed it under *Menispermum* cocculus Linn. Lamarck made it the type of Menispermum glaucum, this species being based wholly on Rumphius's description and figure, so that in turn it becomes the type of Cocculus glaucus DC, and Pericampylus glaucus Merr. Diels placed Folium lunatum minus Rumph.=Cocculus glaucus. DC. =Menispermum glaucum Lam. as a probable synonym of Pericampulus incanus (Colebr.) Miers; Engl. Pflanzenreich 46 (1910) 217. After a careful study of the original description, figure, and the Amboina material cited above, I am able definitely to affirm that this is the correct disposition of the above names. but Lamarck's specific name being much the oldest is here adopted.

STEPHANIA Loureiro

STEPHANIA FORSTERI (DC.) A. Gray Bot. Wilkes U. S. Explor. Exped. (1854) 36.

Cocculus forsteri DC. Syst. 1 (1818) 517. Convolvulus laevis III Rumph. Herb. Amb. 5: 432.

AMBOINA, Paso and near the town of Amboina, Robinson Pl. Rumph. Amb. 487, July and October, 1913, in thickets along the seashore.

The identification of *Convolvulus laevis III* has been made largely by exclusion, although Rumphius's description, as far as it goes, applies unmistakably to the specimen cited above. Moreover, the species has been previously collected in Amboina by Dolleschal, and extends from Java to the Philippines, northern Australia, and Polynesia. Hasskarl, Neue Schlüssel (1866) 143, thought that *Convolvulus laevis III* might be *Cyclea peltata* Hook. f. & Th.=*Cyclea wallichii* Diels, a species extending from India to the Nicobar and Andaman Islands.

TINOSPORA Miers

TINOSPORA RUMPHII Boerl. in Cat. Hort. Bot. Bogor. (1901) 116, excl. syn. Menispermum crispum Linn. et Cocculus crispus DC.

Funis felleus Rumph. Herb. Amb. 5: 82, t. 44, f. 1.

This species is not represented in our Amboina collections. According to Rumphius's statement it was an introduced plant there, perhaps originating in Java. Funis felleus is cited by Linnaeus in the original description of Menispermum crispum Linn.=Cocculus crispus DC.=Tinospora crispa Miers; but, while the plate and figure are quoted correctly, the name is erroneously

cited as Funis quadrangularis, which is the name of the other species figured on the same plate and which is Cissus quadranqularis Linn. The Linnean type was a specimen from Bengal and is apparently the form described by Diels as Tinospora crispa.* The form figured by Rumphius differs notably from the Asiatic one in its orbicular-ovate, prominently cordate leaves, and Rumphius's figure agrees perfectly with material derived from the type plant of Boerlage's Tinospora rumphii, a specimen cultivated in the botanical garden at Buitenzorg, Java. sider that Boerlage was wrong in quoting as synonyms of his species Menispermum crispum Linn. and Cocculus crispus DC., and I am disposed to disagree with Diels in his reduction here of Tinospora thorelii Gagnep., a cotype of which is before me. The authority for Tinospora crispa should manifestly be Miers, the combination being first published by him in Hooker f. and Thomson's Flora Indica 1 (1855) 183, not in Ann. Mag. Nat. Hist. II 7 (1851) 38, as frequently cited, and is typified by Menispermum crispum Linn. Menispermum tuberculatum Lam., to which Lamarck reduced Funis felleus Rumph. is primarily only a new name for Menispermum crispum Linn., and the description was based on a specimen collected by Sonnerat. If the Linnean species be typified by the reference to Rumphius, the only literature reference cited, then the name for this broad and prominently cordate leaved form should be Menispermum crispum (Linn.) Miers, but if the Linnean species be typified by the Bengal plant cited, then apparently Boerlage's name must be maintained for the Malayan form.

Maccabuhay e Manila Rumph. Herb. Amb. 5: 287, as to the name, but not the description, is a species of Tinospora, either T. reticulata Miers or the form characterized by Boerlage as T. rumphii. The name macabuhay is universally applied in the Philippines to two forms of Tinospora, but properly to the one with broad, deeply cordate leaves that has a very bitter principle in its stems. Rumphius's description of Maccabuhay e Manila apparently applies to a terrestrial orchid.

ANAMIRTA Colebrooke

ANAMIRTA COCCULUS (Linn.) Wight & Arn. Prodr. 1 (1834) 446.

Menispermum cocculus Linn. Sp. Pl. (1753) 340.

Menispermum lacunosum Lam. Encycl. 4 (1797) 98 (type!).

Cocculus lacunosus DC. Syst. 1 (1818) 519 (type!).

Tuba baccifera Rumph. Herb. Amb. 5: 35, t. 22.

Not represented in our Amboina collections. Linnaeus ori-

^{*} Engl. Pflanzenreich 46 (1910) 135.

ginally reduced *Tuba baccifera* Rumph. to *Menispermum cocculus* Linn., in Stickman Herb. Amb. (1754) 18, Amoen. Acad. 4 (1759) 128, Syst. ed. 10 (1759) 992, Sp. Pl. ed. 2 (1763) 1468, which, as *Anamirta cocculus* (Linn.) W. & A., is certainly the correct disposition of it. Lamarck made it the type of *Menispermum lacunosum*, and in turn it thus became the type of *Cocculus lacunosus* DC. The species, a very characteristic one, is the sole known representative of the genus and extends from India to the Philippines and southward to New Guinea.

ARCANGELISIA Beccari

ARCANGELISIA FLAVA (Linn.) comb. nov.

Menispermum flavum Linn. in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 128, Syst. ed. 10 (1759) 992 (type!).

Menispermum flavescens Lam. Encycl. 4 (1797) 98 (type!).

Anamirta flavescens Miq. Fl. Ind. Bat. 12 (1858) 79 (type!).

Cocculus flavescens DC. Syst. 1 (1818) 520 (type!).

Arcangelisia inclyta Becc. in Malesia 1 (1877) 147.

Anamirta lemniscata Miers in Ann. Nat. Hist. III 14 (1864) 51.

Arcangelisia leminscata Becc. in Malesia 1 (1877) 147; Diels in Engl. Pflanzenreich 46 (1910) 106, f. 38.

Tuba flava Rumph. Herb. Amb. 5: 38, t. 24.

This is not represented in our Amboina collections. flava Rumph. has been confused in recent botanical literature with Anamirta cocculus Wight & Arn., and several of the above names are cited as synonyms of Anamirta cocculus (Linn.) Wight & Arn. in the most recent monograph of the family; * Menispermum flavum Linn, is not accounted for in this monograph. The first four names cited above are based absolutely and wholly on Tuba flava Rumph. That Arcangelisia and not Anamirta is the proper disposition of it is proved by the original description, leaves 5-nerved at the base, "autem cordiformia sed inferius non excavata;" by the fruit, size, and other characters; and especially by the color of the woody tissue, "interne eleganter flavescunt;" this last character alone being one by which Arcangelisia can always be distinguished from Anamirta. Loureiro, Fl. Cochinch. (1790) 626, cites Tuba flava Rumph. as a synonym of Fibraurea tinctoria Lour., a valid species, the type of the genus Fibraura, but one that has little in common with Arcangelisia. Arcangelisia flava extends from Java to Luzon and New Guinea, and was collected in Amboina by Tevsmann.

^{*} Diels in Engl. Pflanzenreich 46 (1910) 108.

MAGNOLIACEAE

MICHELIA Linnaeus

MICHELIA CHAMPACA Linn. Sp. Pl. (1753) 536.

Michelia suaveolens Pers. Syn. 2 (1807) 94.

Michelia parviflora DC. Syst. 1 (1818) 449? (type!).

Michelia caerulea DC. Syst. 1 (1818) 449? (type!).

Michelia blumei Steud. Nomencl. ed. 2, 2 (1841) 139.

Michelia euonymoides Burm. f. Fl. Ind. (1768) 124, p. p.

Sampacca domestica Rumph. Herb. Amb. 2: 199, t. 67.

Sampacca III parviflora Rumph. Herb. Amb. 2: 200?

The common champaca is not represented in our Amboina collections. Sampacca domestica was described and figured by Rumphius from cultivated specimens and is certainly typical Michelia champaca Linn. It was first reduced by Linnaeus, in Stickman Herb. Amb. (1754) 10, Amoen. Acad. 4 (1759) 121; while in the Systema, ed. 10 (1759) 1082, Sampacca silvestris Rumph., l. c. t. 68, is added: see below under Michelia tsiampacca Linn. Michelia suaveolens Pers, is merely a new name for M. champaca Linn., while M. blumei Steud. was proposed as a new name for Michelia champaca Blume, which, however, is typical M. champaca Linn. The doubtful synonyms mentioned above, both of de Candolle and of Rumphius, must await further exploration of the Malayan region before they can be definitely placed. Michelia parviflora DC. was based wholly on Sampacca parviflora Rumph., which is very briefly described by Rumphius from Ternate specimens as being similar to his Sampacca domestica, but with smaller flowers: it is probably merely a form of M. champaca Linn. Michelia caerulea DC, was based wholly on Sampacca coerulea Rumph., also very briefly described from Javan specimens similar to Sampacca domestica, but with bluish flowers; the Javan name cited is tsjampacca biru, and it is probably merely a form of the common Michelia champaca Linn.

MICHELIA ALBA DC. Syst. 1 (1818) 449 (type!).

Michelia longifolia Blume Bijdr. (1825) 7.

Sampacca domestica IV alba Rumph. Herb. Amb. 2: 200.

Michelia alba DC. was based wholly on Sampacca alba Rumph., which in turn was described from the white-flowered cultivated form known in Java as tsjampacca puti. Michelia longifolia Blume is unquestionably the same form, but de Candolle's name is the older and is here retained.

MICHELIA TSIAMPACCA Linn. Mant. 1 (1767) 78 (type!). Sampacca silvestris Rumph. Herb. Amb. 2: 202. t. 68.

This species is not represented in our Amboina collections. It was described by Rumphius from sylvan specimens growing in Amboina, having white flowers. It is probably allied to Michelia montana Blume. The Rumphian reference seems to be the basis of Michelia tsiampacca Linn., but the plate was originally referred by Linnaeus, Syst. ed. 10 (1759) 1082, to Michelia champaca Linn. By other authors it has been referred to Michelia suaveolens Pers., M. sericea Pers., and M. euonymoides Burm. f., all of which appear to be synonyms of Michelia champaca Linn. The native Amboinese name cited by Rumphius is tsjampacca utan or tsjampacca puti, and botanical material from Amboina will be necessary before the exact status of the species can be determined.

TALAUMA Jussieu

TALAUMA RUMPHII Blume Bijdr. (1825) 10 (type!).

Liriodendron liliifera Linn. Sp. Pl. ed. 2 (1762) 755 (type!) non Talauma liliifera Kurz.

Sampacca montana Rumph. Herb. Amb. 2: 204, t. 69 haud Arbor violaria Rumph. 1. c. 203!

Not represented in our Amboina collections, but manifestly a Talauma. Sampacca montana Rumph. is the whole basis of Liriodendron liliifera Linn., but Talauma liliifera Kurz was based on Liriodendron liliifera Roxb., non Linn., so that the Linnean specific name is invalid in Talauma. The Rumphian plant is also the whole basis of Talauma rumphii Blume, but the species, as yet not represented by any botanical material definitely known to represent the Rumphian plant, is one of doubtful status. Sampacca montana was referred, with doubt, to Magnolia pumila Andr. by de Candolle, Syst. 1 (1818) 458, and it certainly is not this species, nor is it Magnolia inodora DC. l. c. 459, which was based on Liriodendron liliifera Lour., Fl. Cochinch. (1790) 346; Loureiro's species was based on specimens from Canton, China, to which he added a reference to Sampacca montana Rumph.

Arbor violaria Rumph., Herb. Amb. 2: 203, as described, is entirely different from Sampacca montana Rumph. 1. c. 204, t. 69, as described and figured; the plate goes with Sampacca montana, not with Arbor violaria Rumph. It has been assumed by some that the descriptions applied to the same plant, but Arbor violaria was described from cultivated specimens from Banda Island, while Sampacca montana was described from

sylvan specimens collected in Amboina. The descriptions apply to totally different plants, and I am unable to suggest the proper position of *Arbor violaria*.

ANNONACEAE

UVARIA Linnaeus

UVARIA MUSARIA (Dunal) DC. Mém. Anon. (1832) 29 (type!).

Unona musaria Dunal Monogr. Anon. (1817) 100 (type!).

Uvaria moluccana Kostel. Allg. Med.-Pharm. Fl. 5 (1836) 1707 (type!).

Funis musarius latifolius Rumph. Herb. Amb. 5: 78, t. 42.

AMBOINA, Amahoesoe and Hitoe messen, Robinson Pl. Rumph. Amb. 79, September and October, 1913, in flower, growing in forests, altitude 60 to 200 meters; Liang, Robinson Pl. Rumph. Amb. 479, November 29, 1913, in thickets at sea level, with nearly full-grown but immature fruits.

Uvaria musaria (Dunal) DC. has been previously known only from the Rumphian figure and description, this being the whole basis of Unona musaria Dunal, Uvaria musaria DC., and Uvaria moluccana Kostel. In vegetative and floral characters it closely approximates Uvaria rosenbergiana Scheff., of New Guinea. Burman f., Fl. Ind. (1768) 124, followed by Lamarck, Willdenow. Persoon, Poiret, and Pritzel, erroneously reduced Funis musarius latifolius Rumph. to Uvaria zeylanica Linn.; Blume, Fl. Jav. 1 (1828) Anon. 22, equally in error, placed it under Uvaria hirsuta Blume; and Wight and Arnott, Prodr. 1 (1834) 9, placed it under Uvaria macrophylla Roxb. Uvaria musaria (Dunal) DC. seems to be a perfectly valid species, in the alliance with Uvaria rosenbergiana Scheff., U. littoralis Blume, and U. ovalifolia Blume, differing radically, however, in its slightly pubescent leaves and in its elongated puberulent fruits. Uvaria pilosa Roxb., type from the Moluccas, should be critically compared.

UVARIA sp.

Funis musarius angustifolius Rumph. Herb. Amb. 5: 78.

The exact status of this form is indeterminable without material from Amboina. Dunal, Monog. Anon. (1817) 99, reduced it, with doubt, to *Unona narum* Dunal, a species typified by *Narum-panel* Rheede, Hort. Malabar. 2:11, t. 9. Blume, Fl. Jav. 1 (1828) Anon. 24, thought that it might be *Uvaria argentea* Blume, while Wight and Arnott, Prodr. 1 (1834) 9, placed it, with doubt, under *Uvaria grandiflora* Roxb.

UVARIA sp.

Funis dentarius Rumph. Herb. Amb. 5: 79.

Like the preceding, this cannot be definitely placed within 144971—15

the genus *Uvaria* without additional material from Amboina. It is undoubtedly a species of *Uvaria*, and it has been suggested as a possible synonym of *Uvaria littoralis* Blume or *U. latifolia* Blume; see Hasskarl, Neue Schlüssel (1866) 97. The form very briefly mentioned by Rumphius as Funis dentarius niger, Herb. Amb. 5: 79, represents either the same species as *Funis dentarius* Rumph. or a closely allied one.

CANANGIUM Baillon

CANANGIUM ODORATUM (Lam.) Baill. ex King in Journ. As. Soc. Beng. 61² (1892) 41.

Uvaria odorata Lam. Encycl. 1 (1785) 595. Unona odorata Dunal Monog. Anon. (1817) 108. Cananga odorata Hook. f. & Th. Fl. Ind. 1 (1855) 130. Cananga Rumph. Herb. Amb. 2: 195, t. 65.

Amboina, Elephant River, Robinson Pl. Rumph. Amb. 80, July 19, 1913, locally known as bunga kanangan.

Lamarck's original description was primarily based on specimens collected by Sonnerat, Cananga Rumph, being reduced as a synonym. In this reduction, as Canangium odoratum Baill., certainly the correct disposition of it, he was followed by Willdenow, Persoon, Blume, Spanoghe, and Roxburgh. Dunal cites Cananga as a synonym of Unona odorata Dun. in transferring the species to that genus. Cananga Hook. f. & Thomson (1855), the generic name from Rumphius, is invalidated by Cananga Aubl. (1775), for which reason Baillon has proposed the new generic name Canangium, Hist. Pl. 1 (1868) 213, but Baillon did not actually transfer the species to this genus, this being apparently first accomplished by King. In the more recent literature Cananga Rumph, is generally cited under the name Canangium odoratum Baill., in the somewhat older literature, after the year 1855, under Cananga odorata Hook, f. & Th. Pritzel and Burman f. are wrong in referring it to Uvaria zeylanica Linn., which is a true Uvaria, known only from India and Cevlon.

POLYALTHIA Blume

POLYALTHIA sp.

Uvaria ligularis Lam. Encycl. 1 (1785) 597 (type!).
Unona ligularis Dunal Monog. Anon. (1817) 110 (type!).
Cananga silvestris II angustifolia Rumph. Herb. Amb. 2: 197, t. 66, f. 2.

Nothing remotely resembling this occurs in our Amboina collections. The figure and the description apply very closely to Polyalthia lateriflora (Blume) King, a species originally described from Javan material, now known from the Malay Peninsula and Java, and the very closely allied Polyalthia zamboangensis Merr., of Mindanao. Cananga silvestris II angustifolia Rumph, is the whole basis of Uvaria ligularis Lam, and of Unona liquiaris Dunal, and Lamarck's specific name may prove to be the oldest for the plant now known as Polualthia lateriflora King. In the absence of material from Amboina representing Rumphius's species, however, it is considered advisable to defer the actual transfer of Uvaria ligularis Lam. to Polyalthia, although the species manifestly belongs in the latter genus. Linnaeus reduced it, by error, to Uvaria zeylanica Linn., in Stickman Herb. Amb. (1754) 10, Amoen. Acad. 4 (1759) 121, including also Cananga silvestris I trifolia, which is figured on the same plate, but neither of which remotely resembles Uvaria zeylanica Linn., a species known only from India and Cevlon.

POLYALTHIA sp.

Guatteria rumphii Blume ex Henschel Vita Rumph. (1833) 153 (type!).

Arbor nigra parvifolia Rumph. Herb. Amb. 3: 10, 11, t. 4, f. 2; t. 5.

The plant figured and described is certainly a *Polyalthia*, but its status cannot be definitely settled without material from Amboina. It is the whole basis of *Guatteria rumphii* Blume as published by Henschel, by citation of Rumphius, as indicated above, a name that has been entirely overlooked, and one that is not included in Index Kewensis. Linnaeus reduced, with doubt, both t. 4 and t. 5 to *Uvaria zeylanica* Linn., in Stickman Herb. Amb. (1754) 11, Amoen. Acad. 4 (1759) 122, but neither figure presents anything in common with this species. Hasskarl, Neue Schlüssel (1866) 46, quotes Teysmann's opinion that *Arbor nigra parvifolia* Rumph. represented *Artabotrys suaveolens* Blume, a species with which neither the description nor the figure agrees.

Arbor nigra maculosa Rumph. Herb. Amb. 3: 12, t. 4, f. 1, is probably one of the *Annonaceae*, possibly a species of *Polyalthia*. It is certainly not *Artabotrys odoratissimus* Blume, where it was placed by Henschel, Vita Rumph. (1833) 153.

Arbor nigra latifolia Rumph. Herb. Amb. 3: 12, is probably some annonaceous plant, but its status must await a more exhaustive botanical exploration of Amboina. No reduction of it has ever been suggested.

GONIOTHALAMUS Hooker f. and Thomson

GONIOTHALAMUS sp.

Uvaria tripetala Lam. Encycl. 1 (1785) 597 (type!).
Unona tripetaloidea Dunal Monog. Anon. (1817) 104 (type!).
Unona tripetala DC. Prodr. 1 (1824) 90 (type!).
Cananga silvestris I trifolia Rumph. Herb. Amb. 2: 197, t. 66, f. 1.

This is not represented in our Amboina collections. species, as described and figured by Rumphius, is apparently a very characteristic one, and Amboina material representing it, when collected, should be connected with it with little difficulty. Cananga silvestris I trifolia Rumph. is the whole basis of the three names Uvaria tripetala Lam., Unona tripetaloidea Dunal, and *U. tripetala* DC. Poiret, in Lam. Encycl. 8 (1808) 187, referred it to Unona discolor Dunal=Desmos chinensis Lour., an impossible reduction; while Hasskarl, Neue Schlüssel (1866) 40, thought that it might be a species of Artabotrus. also an impossible reduction. As the three inner petals are described as much smaller than the outer three and as surrounding or covering the stamens, it is probable that Goniothalamus is its correct genus, as here tentatively suggested. However, no actual transfer is here made, as the exact status of the species must await further botanical exploration of Amboina.

ARTABOTRYS R. Brown

ARTABOTRYS SUAVEOLENS Blume Fl. Jav. 1 (1828) Anon. 62. Spina vaccarum Rumph. Herb. Amb. 5: 21, t. 14.

This species is not represented in our Amboina collections. Spina vaccarum Rumph. was reduced by Blume to Artabotrys suaveolens Blume in the original description of that species, and the figure is apparently a good representation of it as currently interpreted. All authors have followed Blume in this reduction, the species being one of very wide distribution in the Malayan region. When Amboina material is available for study, however, it should be critically compared with Artabotrys inodorus Zipp. of New Guinea.

MELODORUM Hooker f. and Thomson

MELODORUM LATIFOLIUM (Dunal) Hook. f. & Th. Fl. Ind. (1855) 115, saltem quoad syn.

Unona latifolia Dunal Monog. Anon. (1817) 115 (type!). Uvaria latifolia Blume Fl. Jav. 1 (1828) Anon. 37. Cananga silvestris III latifolia Rumph. Herb. Amb. 2: 198.

This is not represented in our Amboina collections. Unona latifolia Dunal, as originally published, was based wholly on

Rumphius's description of Cananga silvestris III latifolia, and Blume redescribed it from Javan material as Uvaria latifolia Blume, followed by Hooker f. and Thomson, Miquel, and King, as Melodorum latifolium (Dunal) Hook. f. & Th. It is probable that Melodorum latifolium Hook. f. & Th., as described in modern botanical literature, is the same as the form described by Rumphius, the original basis of the species; yet no botanical material from Amboina representing the species as it is at present understood seems to be extant, and the exact status of Unona latifolia Dunal must await further botanical exploration of Amboina.

ANNONA Linnaeus

ANNONA RETICULATA Linn. Sp. Pl. (1753) 537.

Anona Rumph. Herb. Amb. 1: 136, t. 45.

This commonly cultivated fruit tree is not represented in our Amboina collections, but like the next, it doubtless still occurs there, as both are widely distributed in the Malayan region. Anona Rumph. was first reduced to Annona reticulata Linn., in Stickman Herb. Amb. (1754) 7, Amoen. Acad. 4 (1759) 119, Syst. ed. 10 (1759) 1083, Sp. Pl. ed. 2 (1763) 757, which is certainly the correct disposition of it. De Candolle, Syst. 1 (1818) 474, placed it under Annona mucosa Aubl.=Rollinia mucosa Baill., in this erroneous reduction being followed by Don, Henschel, Dietrich, and Pritzel.

ANNONA SQUAMOSA Linn. Sp. Pl. (1753) 537.

Anona tuberosa Rumph. Herb. Amb. 1: 138, t. 46.

Like the above, this commonly cultivated plant is not represented in our Amboina collections. *Anona tuberosa* Rumph. was first reduced by Linnaeus, in Stickman Herb. Amb. (1754) 7, Amoen. Acad. 4 (1759) 119; this reduction has been consistently followed by most authors and is certainly the correct disposition of the species.

MYRISTICACEAE

MYRISTICA * Linnaeus

MYRISTICA FRAGRANS Houtt. Handleid. 23 (1774) 333.

Myristica officinalis Linn. f. Suppl. (1781) 265.

Myristica moschata Thunb. Act. Holm. (1782) 45.

Myristica aromatica Lam. Act. Paris (1788) 155.

Nux myristica Rumph. Herb. Amb. 2: 14, t. 4.

AMBOINA, Kati-kati and Way tommo, Robinson Pl. Rumph. Amb. 245, 246, August and October, 1913, from cultivated plants, altitude 50 to 60 meters, locally known as pala.

^{*} Retained name, Vienna Code; Quret Adans. (1763) is older.

Nux myristica Rumph. has been cited by various authors under all of the names listed above. Rumphius described five forms, all apparently merely variants of the common nutmeg, although Miquel referred Pala radja Rumph. to Myristica radja Miq., Ann. Mus. Bot. Lugd. Bat. 1 (1864) 206. Warburg, Nov. Act. Akad. Naturf. 68 (1897) 453, considers the plant that Miquel described to be Myristica speciosa Warb., not M. fragrans Houtt.

MYRISTICA FATUA Houtt. Handleid 2 3 (1774) 337.

Myristica tomentosa Thunb. Act. Holm. (1782) 46.
Myristica spadicea Blume Bijdr. (1825) 577.
Myristica macrophylla Roxb. Fl. Ind. ed. 2, 3 (1832) 846.
Nux myristica mas Rumph. Herb. Amb. 2: 24, t. 5.

Nothing resembling *Myristica fatua* Houtt., as currently interpreted, occurs in our Amboina collections. *Nux myristica mas* has been referred by various authors to *Myristica fatua* Houtt., *M. tomentosa* Thunb., *M. officinalis* Gaertn., *M. philippensis* Lam., *M. malabarica* Lam., and *M. moschata* Thunb., the reductions in all but the two cases first cited being erroneous. The species is a well-known one, occurring in Banda, Amboina, Tidore, and (?) Buru, and is cultivated in the botanic garden at Buitenzorg, Java.

HORSFIELDIA Willdenow

HORSFIELDIA SYLVESTRIS (Houtt.) Warb. in Nov. Act. Acad. Naturf. 68 (1897) 337, t. 12, f. 1-6.

 $Myristica\ sylvestris\ Houtt.$ Handl. 2 $^{\circ}$ (1774) 326.

Myristica salicifolia Willd. Sp. Pl. 4 (1805) 871.

Myristica pinnaeformis Miq. Ann. Mus. Bot. Lugd. Bat. 2 (1865) 49. Palala secunda Rumph. Herb. Amb. 2: 26, t. 6 (poor).

AMBOINA, Hitoe messen, Robinson Pl. Rumph Amb. 235, November 1, 1913, in forested ravines, altitude about 100 meters.

The Rumphian figure and description are perhaps the type of *Myristica sylvestris* Houtt. (original publication not seen by me); *Myristica salicifolia* Willd. is merely a new name for *M. sylvestris* Houtt.

HORSFIELDIA CANARIFORMIS (Blume) comb. nov.

Myristica canariformis Blume Rumphia 1 (1835) 190 (type!). Horsfieldia roxburghii Warb. in Nov. Act. Akad. Naturf. 68 (1897) 277, t. 21, f. 1-2.

Palala quarta Rumph. Herb. Amb. 2: 27, t. 8.

AMBOINA, Hitoe messen, Robinson Pl. Rumph. Amb. 240, November 1, 1913, in forests, altitude about 175 meters.

Palala quarta Rumph. is the whole basis of Myristica canariformis Blume, which Warburg thought was a possible synonym of Horsfieldia nesophila (Miq.) Warb. I am of the opinion, however, that it is identical with the Amboina form described by Warburg as Horsfieldia roxburghii and accordingly have here adopted Blume's specific name. Willdenow, Sp. Pl. 4 (1805) 871, considered that it represented a variety of Myristica microcarpa Willd., whatever that species may be, but it is certainly not properly placed here.

HORSFIELDIA sp.

Myristica tingens Blume Rumphia 1 (1835) 190 (type!). Palala tertia Rumph. Herb. Amb. 2: 27, \dot{t} . 7.

According to Rumphius's description and figure this is a very characteristic species, but nothing in our Amboina collections can be referred to it. Palala tertia Rumph, is the whole basis of Myristica tingens Blume, but no new combination is here made in view of the uncertain status of that species. Willdenow, Sp. Pl. 4 (1805) 871, referred it to Myristica microcarpa Willd., which is perhaps the oldest valid specific name for the species. Lamarck, Encycl. 4 (1797) 391, placed it with doubt under Myristica uviformis Lam., but Lamarck's species is not a myristicaceous plant, and Warburg has suggested that it belongs in the Euphorbiaceae. The status of Myristica microcarpa Willd. is entirely doubtful, for I cannot agree with Warburg that it is a synonym of Knema cinerea Warb. Incidentally the type of Knema cinerea (Poir.) Warb, certainly did not come from the Philippines as Warburg states, for LaBillardière never visited the Archipelago. Buton, as spelled by him, and Bouton, as spelled by Poiret in the original description, probably refer to Boeton Island, near the southern end of Celebes.

HORSFIELDIA sp.

Myristica aruana Blume Rumphia 1 (1835) 191 (type!). Palala aruana Rumph. Herb. Amb. 7: 56, t. 24, f. 3.

A species of doubtful status, probably, however, a *Horsfieldia*. *Myristica aruana* Blume was based wholly on *Palala aruana* Rumph. and accordingly must be interpreted solely from Rumphius's description and crude figure. If Warburg is correct in reducing *Myristica aruana* Blume to *Horsfieldia novo-guineensis* Warb., then Blume's specific name should be adopted for the species unless one considers it invalidated by the distinct *Horsfieldia aruensis* Warb.

GYMNACRANTHERA Warburg

GYMNACRANTHERA ZIPPELIANA (Miq.) Warb. in Nov. Act. Akad. Naturf. 68 (1897) 372.

Myristica zippeliana Miq. Ann. Mus. Bot. Lugd. Bat. 2 (1865) 50. Palala quinta Rumph. Herb. Amb. 2: 28, t. 9.

AMBOINA, Hitoe messen, Robinson Pl. Rumph. Amb. 239, October 18, 1913, in forests, altitude about 450 meters, locally known as palala utan.

Willdenow, Sp. Pl. 4 (1805) 871, considered Palala quinta Rumph. to be a variety of Myristica microcarpa Willd., while Lamarck, Encycl. 4 (1797) 388, placed it with doubt under Myristica globularia Lam. Lamarck's species was based on specimens collected by Sonnerat and is Knema globularia Warb. There is little doubt that the specimen cited above represents Palala quinta Rumph., and it is certainly a Gymnacranthera, probably G. zippeliana Warb., although this species has not been previously reported from Amboina.

KNEMA Loureiro

KNEMA TOMENTELLA Warb. in Nov. Act. Akad. Naturf. 68 (1897) 588, t. 25, f. 1-2.

Palala sexta Rumph. Herb. Amb. 2: 28.

AMBOINA, Hatiwe, Waë, and Kati-kati, Robinson Pl. Rumph. Amb. 236, 237, 238, September to November, 1913, in forests, altitude 20 to 350 meters, locally known as palala utan.

Palala sexta Rumph. is, with little doubt, the same as Knema tomentella Warb. Hasskarl, Neue Schlüssel (1866) 26, suggested that it might be the same as Myristica corticosa Hook. f. & Th., which Warburg interprets as being composed of Knema angustifolia Warb., K. glauca Warb., and K. missionis Warb.

LAURACEAE

CINNAMOMUM Linnaeus

CINNAMOMUM CULILAWAN Blume Bijdr. (1825) 571, Rumphia 1 (1835) 26, t. 9, f. 1.

Laurus culitlawan Linn. in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 120 (type!).

Laurus culilaban Linn. Mant. 2 (1771) 237 (type!).

Cortex caryophylloides albus Rumph. Herb. Amb. 2: 65, t. 14.

Culit Lawan Rumph. Herb. Amb. 7: 65.

The Rumphian figure and description of *Cortex caryophylloides albus* are the whole basis of both *Laurus culitlawan* Linn. and *L. culilaban* Linn., but *Cinnamomum culilawan* Blume was published independently of the Linnean binomials. Blume gives an ample description and figures from Amboina material;

however, he definitely excludes the figure of the inflorescence as given by Rumphius, which he apparently thought went with *Cinnamomum caryophylloides ruber* Rumph.

CINNAMOMUM CULILAWAN Blume var. RUBRUM (Blume) Meissn. in DC. Prodr. 15¹ (1864) 14.

Cinnamomum rubrum Blume Rumphia 1 (1835) 29.

Cinnamomum caryophylloides ruber Rumph. Herb. Amb. 2: 66.

Blume based his description of *Cinnamomum rubrum* partly on the form described by Rumphius above cited, which Meisner considers to be a variety of *Cinnamomum culilawan* Blume.

CINNAMOMUM XANTHONEURUM Blume Rumphia 1 (1825) 33.

Culitlawan ex Papuanis et Moluccis insulis Rumph. Herb. Amb. 2: 66.

This follows Blume's reduction of the form Rumphius described, which is probably the correct disposition of it.

CINNAMOMUM JAVANICUM Blume Rumphia 1 (1835) 42. Sindoc Rumph. Herb. Amb. 2: 69.

The reduction of *Sindoc* follows Blume's disposition of it. The form Rumphius described was placed by Burman f. under *Laurus malabathrum* Burm. f., Fl. Ind. (1768) 92, based in part on a species figured and described by Rheede, and in part on *Sindoc* of Rumphius, to be typified by the former. Miquel placed it under *Cinnamomum sulphuratum* Nees; Henschel placed it under *Cinnamomum sintoc* Blume; and Nees followed Blume in reducing it to *Cinnamomum javanicum* Blume.

CINNAMOMUM CAMPHORA (Linn.) T. Nees & Eberm. Handb. Med.-Pharm. Bot. 2 (1831) 430.

Laurus camphora Linn. Sp. Pl. (1753) 369.

Arbor camphorifera I vera Rumph. Herb. Amb. 7: 65, 68.

The general discussion is manifestly in part applicable to the true camphor tree, Cinnamomum camphora T. Nees & Eberm.

CINNAMOMUM spp. indet.

Laurus japanica Rumph. Herb. Amb. 7: 64. Cinnamomum japanicum II Rumph. Herb. Amb. 7: 64. Cinnamomum zeylanicum Rumph. Herb. Amb. 7: 64.

These three forms, imperfectly described, are manifestly referable to the genus *Cinnamomum*, but it is impossible to determine just which species were intended. The first was placed by Henschel under *Laurus soncaurium* Ham.=*Cinnamomum tamala* T. Nees & Eberm., of the Himalayan region, certainly a wrong disposition of it; the second was thought by Hasskarl, Neue Schlüssel (1866) 192, to be possibly referable to *Cinnamomum dulce* Nees; and the third was placed by Hasskarl under *Cinna-*

momum zeylanicum Nees, which is perhaps the correct disposition of it.

DEHAASIA Blume

DEHAASIA MEDIA Blume Rumphia 1 (1835) 163, t. 45.

Haasia media Nees Syst. Laur. (1836) 375. Machilus III media Rumph. Herb. Amb. 3: 70, t. 41.

This is not represented in our Amboina collections. Blume's ample description and figure were based on Amboina material, and his disposition of *Machilus media* Rumph. is doubtless correct, Rumphius's description and figure being cited in the original description of the species. Nees, Syst. Laur. (1836) 125, thought that it might be *Persea peduncularis* Nees, and it was cited by Henschel as *Machilus peduncularis* Nees.

MACHILUS Nees

MACHILUS sp.?

Machilus IV minima Rumph. Herb. Amb. 3: 70, t. 42.

Nothing resembling the plant figured and described is presented by our Amboina collections, but a species of *Machilus*, as interpreted by Meisner, is probably intended. The generic name *Machilus* of Nees is taken from Rumphius. Loureiro, Fl. Cochinch. (1790) 253, referred *Machilus minima* with doubt to *Laurus indica* Linn., an entirely wrong disposition of it. Nees thought that the figure represented *Machilus odoratissima* Nees, Syst. Laur. (1836) 172, and repeated the reduction in DC. Prodr. 15 (1864) 40. It is certainly not *Machilus odoratissima* Nees and may ultimately prove to belong to some other genus. It is possibly a species of *Phoebe* rather than of *Machilus*.

EUSIDEROXYLON Teysmann and Binnindyck

EUSIDEROXYLON ZWAGERI Teysm. & Binn. in Nat. Tijdschr. Nederl. Ind. 25 (1863) 292.

Lontaro simile lignum Rumph. Herb. Amb. 1: 52.

Rumphius includes only a brief description of the Bornean wood which he calls *caju boelian*; the identification has been made from the native name cited, *billian* being the common name for this important Bornean timber tree.

LITSEA* Lamarck

LITSEA RUMPHII (Blume) F.-Vill. Noviss. App. Fl. Filip. (1880) 180.

Tetranthera rumphii Blume Mus. Bot. 1 (1851) 382.

Lignum leve alterum Rumph. Herb. Amb. 3: 72, t. 45.

^{*} Retained name, Vienna Code; Malapoenna Adans. (1763) and Tomex Thumb. (1783) are older.

Not represented in our Amboina collections. The reduction was made by Blume in the original description of *Tetranthera rumphii* Blume, and this is presumably the correct disposition of the Rumphian species; Blume apparently had a specimen from Amboina, judging from his short and imperfect description. Nees thought that it was a species of *Tetranthera* near *T. monopetala* Roxb.

LITSEA sp.

Glabraria tersa Linn. Mant. 2 (1771) 276, quoad syn. Rumph. Lignum leve angustifolium Rumph. Herb. Amb. 3: 71, t. 44.

Not represented in our Amboina collections. The plant that Rumphius figured and described is manifestly a species of Litsea, apparently in the group with Litsea fulva F.-Vill. and Litsea luzonica F.-Vill. Blume, Mus. Bot. 1 (1851) 383, placed it as a possible synonym of Tetranthera forstenii Blume=Litsea forstenii Boerl. Its exact status, however, cannot be determined without Amboina material. Linnaeus, Mant. 2 (1771) 276. quoted Lignum leve angustifolium Rumph. as a synonym of Litsea tersa Linn, in the original description of that species. It is clearly manifest, however, from the description, that he had an actual specimen, and it is equally manifest that the plant he described is not the same as the one figured and described by Rumphius. The specimen in the Linnean herbarium has been examined for me by Mr. Gamble, who writes under date of June 17, 1917, that it is a polypetalous plant, probably belonging in the Bombacaceae near the genus Boschia Korth. Glabraria Linnaeus must, accordingly, be eliminated as a synonym of Litsea. Persoon, Syn. 2 (1807) 4, following Linnaeus's erroneous reduction of Lignum leve angustifolium, quotes it as a synonym of Litsea glabraria Pers., as does Nees under Tetranthera glabraria Nees; these names, however, go with Litsea glutinosa (Lour.) C. B. Rob. (L. chinensis Lam., L. sebifera Pers.), as does Litsea tersa Merr. (non Glabraria tersa Linn.).

LITSEA STICKMANII sp. nov.

Lignum leve latifolium Rumph. Herb. Amb. 3: 71, t. 43.

AMBOINA, Hitoe messen and Paso, Robinson Pl. Rumph. Amb. 470, 471 (type), November 1 and 25, 1913, in forests and along roadsides, altitude 3 to 200 meters, locally known as halaor pantey.

Arbor 10 ad 12 m alta, inflorescentiis exceptis glabra; foliis oblongis, firme chartaceis, usque ad 20 cm longis, utrinque aequaliter angustatis, basi acutis, apice acutis vel obscure acuminatis, supra subolivaceis, subtus pallidis, nervis utrinque circiter 8, subtus prominentibus, curvato-adscendentibus, reticulis distinctis; inflorescentiis axillaribus, fasciculatis, umbel-

lulis circiter 6-floris, longe graciliterque pedunculatis, floribus pubescentibus.

A tree 10 to 12 m high, quite glabrous except the inflorescence. Branches and branchlets brownish, the latter more or less angled. Leaves alternate, oblong, firmly chartaceous, 12 to 20 cm long, 3.5 to 5.5 cm wide, equally narrowed to the acute base and to the acute or obscurely acuminate apex, the upper surface more or less olivaceous when dry, smooth and shining, the lower pale; lateral nerves about 8 on each side of the midrib, prominent on the lower surface, curved-ascending, obscurely anastomosing, the ultimate reticulations fine, rather close; petioles about 1 cm long. Flowers axillary, the umbellules fascicled, their peduncles slender, slightly pubescent, about 1 cm long, each about 6-flowered. Bracts obovate to elliptic-obovate, rounded, concave, pubescent, 3.5 to 4 mm long. Flowers appressed-pubescent, their pedicels 2 to 3 mm long, the lobes oblong, 2 mm in length. Fruit unknown, when very young one to three on each peduncle.

This species is apparently allied to the form Blume described as *Tetranthera ambigua* Blume (not *Litsea ambigua* Nees), but differs in its smaller leaves, glabrous branchlets, and other characters. It certainly represents *Lignum leve latifolium* Rumph. It is dedicated to O. Stickman, author of the first publication on the Herbarium Amboinense.

Loureiro, Fl. Cochinch. (1790) 471, erroneously referred Lignum leve latifolium Rumph. to Glabraria tersa Linn., followed by Blume's reference of it to Tetranthera laurifolia Jacq. var. tersa (Linn.) Blume, with which it has nothing in common. Nees, in DC. Prodr. 15 1 (1864) 180, placed it, with doubt, under Tetranthera laurifolia Jacq. var. saligna Nees, where it certainly does not belong.

LITSEA sp.

Machilus II femina Rumph. Herb. Amb. 3: 69, t. 40, f. B.

AMBOINA, Hoetoemoeri road, Robinson Pl. Rumph. Amb. 469, September 30, 1913, in forests, altitude about 300 meters.

The specimen cited certainly represents the form described by Rumphius, of which he figures a single leaf. There is nothing in the figure by which Machilus I mas can be distinguished from *Machilus femina*, and it certainly represents a species of *Litsea* perhaps not distinct from the one here considered. The only previous suggestion as to the identity of *Machilus I mas* Rumph., Herb. Amb. 3: 68, t. 40, is Teysmann's opinion, quoted by Hass-

karl, Neue Schlüssel (1866) 51, that it belongs in the *Lauraceae*, and of *Machilus II femina* Rumph. that it might be a species of *Haasia*, which is certainly a wrong disposition of it.

NEOLITSEA Merrill

NEOLITSEA AMBOINENSIS sp. nov.

Machilus angustifolia Rumph. Herb. Amb. 7: 60, t. 27, f. 1.

Amboina, between Soja and Hatalai, Robinson Pl. Rumph. Amb. 606 (type), October 24, 1913, in light forests, altitude about 350 meters.

Arbor circiter 9 m alta, ramulis junioribus inflorescentiisque pubescentibus; foliis verticillatis vel subverticillatis, glabris, oblongo-lanceolatis ad oblongo-ellipticis, usque ad 12 cm longis, utrinque subaequaliter angustatis, basi acutis, vix triplinervis, apice tenuiter acuminatis, nervis utrinque circiter 5, curvato-adscendentibus, subtus prominentibus; fructibus junioribus ovoideis, in siccitate nigris, nitidis, circiter 6 mm diametro.

A tree about 9 m high, the young branchlets and inflorescences pubescent. Branches slender, terete, grayish, the younger ones reddish-brown, smooth, glabrous, tips of the branchlets rather densely appressed-pubescent. Leaves coriaceous, subverticillate or verticillate at the ends of the branchlets, oblong-lanceolate to oblong-elliptic, 7 to 12 cm long, 2.5 to 3.5 cm wide, subequally narrowed to the acute base and to the rather slenderly and sharply acuminate apex, the upper surface subolivaceous, smooth and shining, the lower slightly paler, sometimes somewhat glaucous, glabrous, or the midrib sometimes sparingly pubescent, the base scarcely triplinerved; lateral nerves about 5 on each side of the midrib, curved-ascending, scarcely anastomosing, prominent on the lower surface, the ultimate reticulations close. rather indistinct; petioles more or less pubescent, 5 to 7 mm long. Flowers not seen. Infructescences in the axils of fallen leaves, fascicled, the pedicels and persistent calyx ferruginousvillous, the pedicels rather stout, about 5 mm long. Young fruit ovoid, about 6 mm in diameter, glabrous, black and shining when dry.

A species in the group with Neolitsea triplinervia (Blume) (Litsea triplinervia Blume), and Neolitsea cassiaefolia (Blume) Litsea cassiaefolia Blume), but the leaves not prominently triplinerved as in these two Javan species, in fact they are strictly penninerved, the lower pair being no longer than the next pair above.

The species is, with very little doubt, *Machilus angustifolia* Rumph. Rumphius's description applies closely, but the figure

is poor and presents the leaves relatively much narrower than in the species as here interpreted. Henschel and Pritzel erroneously reduced *Machilus angustifolia* Rumph. to *Tetranthera angustifolia* Wall.=Actinodaphne angustifolia Nees.

ACTINODAPHNE Nees

ACTINODAPHNE RUMPHII Blume Mus. Bot. 1 (1851) 344.

Arbor spiculorum aeruginea Rumph. Herb. Amb. 3: 167, t. 106.

This species is not represented in our Amboina collections. Blume made this reduction of the Rumphian illustration in the original description of *Actinodaphne rumphii* Blume, which was based on material from the Moluccas, probably Amboina. He cites the Rumphian name as *Arbor spiculorum angustifolia*, but the figure manifestly goes with the form called by Rumphius *Arbor spiculorum aeruginea*.

ACTINODAPHNE MOLUCCANA Blume Mus. Bot. 1 (1851) 344 (type!). Arbor spiculorum latifolia Rumph. Herb. Amb. 5: 167.

A species of very doubtful status, based wholly on Rumphius's description. The third form described by Rumphius in this chapter as Arbor spiculorum angustifolia brevifolia is entirely doubtful, but is probably a lauraceous plant.

CRYPTOCARYA R. Brown

CRYPTOCARYA sp.?

Lauraster amboinensis maxima Rumph. Herb. Amb. 2: 70, t. 15.

Nothing resembling this is presented in our Amboina collections. The species described and figured by Rumphius is certainly a lauraceous plant and is probably a *Cryptocarya*, judging from the rather crude figure. Local names cited by Rumphius are *leytun*, *hiber*, *hiyr*, *ittir*, *ayhoo-ittil*, and *ley itir*, so that it is very probable that the species can later be located through one of the above names. The form described in the same chapter as Lauraster amboinensis minor probably represents an entirely different species, possibly also a *Cryptocarya*; its status is quite uncertain and cannot be determined from data at present available.

MASSOIA Beccari

MASSOIA AROMATICA Becc. in d'Albertis New Guinea 2 (1880) 398.

Cortex oninius s. massoy Rumph. Herb. Amb. 2: 62.

The reduction has been made from the characters given by Rumphius and the name massoy cited by him. The status of

Massoia as a genus is very uncertain. The form described by Rumphius as Cortex oninius II may or may not be the same as Massoia aromatica Becc.; Hasskarl, Neue Schlüssel (1866) 28, cites it under Cinnamomum kaimis Nees.

CASSYTHA Linnaeus

CASSYTHA FILIFORMIS Linn. Sp. Pl. (1753) 35.

Calodium cochinchinensis Lour. Fl. Cochinch. (1790) 247.

Cussuta s. cussutha indica Rumph. Herb. Amb. 5: 491, t. 184, f. 4.

AMBOINA, Hatiwe, Robinson Pl. Rumph. Amb. 472, September 4, 1913, along the seashore.

This reduction was first made by Linnaeus, in Stickman Herb. Amb. (1754) 25, Amoen. Acad. 4 (1759) 133, Syst. ed. 10 (1759) 862, Sp. Pl. ed. 2 (1762) 531, and this is manifestly the correct disposition of *Cussutha indica* Rumph. *Calodium cochinchinensis* Lour., under which Loureiro cited the Rumphian description and illustration, is a synonym of *Cassytha filiformis* Linn.

HERNANDIACEAE

HERNANDIA Plumier

HERNANDIA OVIGERA Linn. in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 125, Syst. ed. 10 (1759) 1264, Sp. Pl. ed. 2 (1763) 1392 (type!).

Arbor ovigera femina Rumph. Herb. Amb. 3: 193, t. 123.

Amboina, Robinson Pl. Rumph. Amb. 476, a single specimen separated from No. 477, Hernandia peltata Meisn.

This represents the form figured by Rumphius and the one described as *Arbor ovigera femina*. The Linnean species is typified by the Rumphian figure and description, *Hernandia ovigera* Linn. being based wholly on *Arbor ovigera t. 123*.

HERNANDIA PELTATA Meisn. in DC. Prodr. 15 1 (1864) 263.

Arbor ovigera mas Rumph. Herb. Amb. 3: 193.

AMBOINA, Robinson Pl. Rumph. Amb. 477, August 8, 1913, along the seashore near the town of Amboina, locally known as mata ipang or mata ikang.

The form described by Rumphius as *Arbor ovigera mas* is unmistakably *Hernandia peltata* Meisn., the leaves being definitely described as peltate. It is strongly suspected that *Hernandia peltata* Meisn. is not specifically distinct from *Hernandia ovigera* Linn., but is merely a form with peltate leaves. It is assumed that the specimen cited under *Hernandia ovigera* Linn. and the one cited under *H. peltata* Meisn. came from the same tree.

CRUCIFERAE

NASTURTIUM * R. Brown

NASTURTIUM INDICUM (Linn.) DC. Syst. 2 (1821) 199.

Sisymbrium indicum Linn. Mant. 1 (1767) 93.

Sinapi indigenum s. amboinicum Rumph. Herb. Amb. 5: 282.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 268, July 19, 1913, in and near ditches.

Hasskarl, Neue Schlüssel (1866) 121, has suggested that this is a species of *Sinapis*; but from Rumphius's brief description, the indicated habitat, and the note that it has no economic use, it is evident that *Nasturtium* is the plant intended.

BRASSICA (Tourn.) Linnaeus

BRASSICA JUNCEA (Linn.) Coss. in Bull. Soc. Bot. France 6 (1859) 609.

Sinapis juncea Linn. Sp. Pl. (1753) 668.

Sinapi sinense Rumph. Herb. Amb. 5: 282.

Amboina, Titauuku, Robinson Pl. Rumph. Amb. 405, October 8, 1913, in cleared places, altitude about 120 meters, locally known as susawi ambon and rumput china blanda.

This specimen I take to be typical Brassica juncea Coss., the ordinary form that is widely distributed in the Malay Archipelago. The plant, or plants, actually described by Rumphius, are, however, the cultivated forms of Chinese origin, which appear to be forms of Brassica pekinensis (Lour.) Skeels (Sinapis pekinensis Lour.). Rumphius indicates two forms, under the names album and nigrum. It seems very probable that this commonly cultivated Chinese form is but a horticultural variety of Brassica juncea Coss.

CAPPARIDACEAE

POLANISIA Rafinesque

POLANISIA VISCOSA (Linn.) DC. Prodr. 1 (1824) 242.

Cleome viscosa Linn. Sp. Pl. (1753) 672.

Lagansa alba Rumph. Herb. Amb. 5:280, t. 96, f. 3.

AMBOINA, Liang, Robinson Pl. Rumph. Amb. 412, November 29, 1913, along roadsides, at low altitudes, locally known as lagansa.

This common weed was originally reduced by Linnaeus, in

^{*} Retained name, Brussels Congress; Cardaminium Moench (1794), and Baeumerta Gaertn. (1800) are older.

Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1137, to Cleome icosandra Linn., but the plant described as Lagansa alba is manifestly the form commonly known as Polanisia viscosa (Linn.) DC. In the description of the plate figure 2 is connected with Lagansa alba, but it is apparent that the figures are reversed between Lagansa alba and Lagansa rubra.

GYNANDROPSIS* de Candolle

GYNANDROPSIS PENTAPHYLLA (Linn.) DC. Prodr. 1 (1824) 238.

Cleome pentaphylla Linn. Sp. Pl. ed. 2 (1763) 938. Lagansa rubra Rumph. Herb. Amb. 5: 280, t. 96, f. 2.

The common and well-known *Gynandropsis pentaphylla* DC. is not represented in our Amboina collections. The Rumphian description, however, applies well to this species. In the description of the plate the explanations of *Lagansa alba* and *Lagansa rubra* are transposed.

MORINGACEAE

MORINGA Burman f.

MORINGA OLEIFERA Lam. Encycl. 1 (1785) 398.

Guilandina moringa Linn. Sp. Pl. (1753) 381.

Moringa pterygosperma Gaertn. Fruct. 2 (1791) 314.

Morunga Rumph. Herb. Amb. 1: 184, t. 74.

Morunga femina Rumph. Herb. Amb. 1: 185, t. 75.

AMBOINA, in cultivation, near the town of Amboina, Robinson Pl. Rumph. Amb. 255, September 13, 1913, locally known as kelor.

The reduction of *Morunga*, t. 74, was first made by Linnaeus, in Stickman Herb. Amb. (1754) 8, Amoen. Acad. 4 (1759) 120; and in the Systema, ed. 10 (1759) 1018, he also reduced *Morunga femina*, t. 75. Both figures manifestly represent the same species, and both are unmistakably the common and well-known *Moringa oleifera* Lam. Other names, all synonyms, to which the Rumphian figures have been referred by various authors are: *Hyperanthera moringa* Vahl, *Moringa zeylanica* Willd., *Moringa domestica* Ham., *Anoma moringa* Lour., A. *morunga* Lour., and *Moringa polygona* DC.; some of these are to be interpreted in part by the Rumphian figures. *Moringa domestica* Ham., in Mem. Wern. Soc. 5 ² (1826) 368, 371, does not appear in Index Kewensis.

^{*} Retained name, Vienna Code; Pedicellaria Schrank (1790) is older.

NEPENTHACEAE

NEPENTHES Linnaeus

NEPENTHES MIRABILIS (Lour.) Merr. comb. nov.

Phyllamphora mirabilis Lour. Fl. Cochinch. (1790) 606. Nepenthes phyllamphora Willd. Sp. Pl. 4 ² (1805) 874. Cantharifera Rumph. Herb. Amb. 5: 121, t. 59, f. 2.

AMBOINA, Batoe mera, Robinson Pl. Rumph. Amb. 256, July 31, 1913, on a fern-covered hillside along the river at an altitude of from 10 to 50 meters; Batoe gadjah, Robinson Pl. Rumph. Amb. 257, August 5, 1913, on grassy hillsides at an altitude of about 150 meters.

Cantharifera was erroneously reduced by Linnaeus to Nepenthes distillatoria Linn., the type of the genus, and a species confined to Ceylon, in Stickman Herb. Amb. (1754) 20. Amoen. Acad. 4 (1759) 129, Syst. ed. 10 (1759) 1247, Sp. Pl. ed. 2 (1763) 1354, in which he was followed by Burman f., Fl. Ind. (1768) 190. Loureiro, however, Fl. Cochinch. (1790) 606, described a Cochin-China specimen as Phyllamphora mirabilis Lour., and under it he discussed Cantharifera Rumph., stating that it differed from his plant in its prostrate stems and scandent branches. The species, as described by Loureiro, must be interpreted from Cochin-China specimens, but in all probability is the same as the widely distributed species commonly known as Nepenthes phyllamphora Willd., which is definitely known from low altitudes from southern China to the Philippines, Borneo, Malay Peninsula, Sumatra, Amboina, the Caroline Islands, and New Guinea. Nepenthes phyllamphora Willd, was based wholly on Loureiro's species, but Willdenow definitely refers here Cantharifera Rumph. Under the accepted code of botanical nomenclature the above new combination is necessary for this well-known and widely distributed species; both names, Phyllamphora mirabilis and Nepenthes phyllamphora, must be interpreted by the plant Loureiro described.

NEPENTHES MAXIMA Reinw. ex Nees in Ann. Sci. Nat. I 3 (1824) 369, t. 20, f. 3.

Cantharifera alba Rumph. Herb. Amb. 5: 122.

AMBOINA, Salahoetoe, Robinson Pl. Rumph. Amb. 413, November 27, 1913, terrestrial and climbing, chiefly at an altitude of about 900 meters, locally known as tampayan utan.

The identification of Cantharifera alba with Nepenthes maxima Reinw. was suggested by Hasskarl, Neue Schlüssel (1866) 103, and there is but very little doubt that this is the correct disposition of it. It was described by Rumphius from specimens received from the neighboring island of Little Ceram and was

not recorded by him as being from Amboina. Macfarlane* definitely records *Nepenthes maxima* Reinw. from Amboina, New Guinea, Celebes, and Borneo.

CRASSULACEAE

KALANCHOE Adanson

KALANCHOE LACINIATA (Linn.) DC. Pl. Grass. (1799-1829) t. 100, Prodr. 3 (1828) 395.

Cotyledon laciniata Linn. Sp. Pl. (1753) 430. Planta anatis Rumph. Herb. Amb. 5: 275, t. 95.

This species is not represented in our Amboina collections. The figure is poor, but the description, at least in most part, applies to this widely distributed species. It may, in part, apply also to Bryophyllum pinnatum (Lam.) Kurz (B. calycinum Salisb.), but the description of the flowers as 5-merous and yellow indicates a Kalanchoe not a Bryophyllum. The reduction of Planta anatis to Cotyledon laciniata Linn. was made by Linnaeus himself, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1036, Sp. Pl. ed. 2 (1762) 615, in which he has been followed by all later authors, either under Cotyledon, Kalanchoe, or Verrea.

Bryophyllum pinnatum (Lam.) Kurz. (B. calycinum Salisb.) occurs in our Amboina collections (Roemah tiga, Rel. Robins. 1819, July 30, 1913) and, as noted above, may be included in the Rumphian description of Planta anatis. Primarily, however, Planta anatis is certainly Kalanchoe laciniata (Linn.) DC.

PITTOSPORACEAE

PITTOSPORUM Banks

PITTOSPORUM MOLUCCANUM (Lam.) Miq. Ill. Fl. Arch. Ind. (1871) 76.

Anasser moluccana Lam. Ill. 2 (1797) 40 (type!).

Anassera moluccana Pers. Syn. 1 (1805) 265 (type!).

Pittosporum ferrugineum Ait. var. filarium DC. Prodr. 1 (1824) 347 (type!).

Pittosporum rumphii Putterl. Syn. Pitt. (1839) 7 (type).

Cortex foetidus Rumph. Herb. Amb. 7: 12, t. 7.

This species is not represented in our Amboina collections, but Miquel, l. c., cites Amboina material collected by Zippel and by Teysmann, on which his sufficiently ample description is based. The Rumphian figure and description are the whole basis of Anasser moluccana Lam., Anassera moluccana Pers., and de Candolle's variety of Pittosporum ferrugineum cited above (erroneously cited as Cortex filiarius, but the page and

^{*} Engl. Pflanzenreich 36 (1908) 76.

plate numbers are correct), and apparently Putterlick's Pittosporum rumphii. It differs from Pittosporum ferrugineum Ait, notably in its larger fruits and leaves.

PITTOSPORUM sp.?

Cortex igneus Rumph. Herb. Amb. 7: 10, t. 6, f. 1.

Hasskarl, Neue Schlüssel (1866) 186, thought that this might be a species of Pittosporum, following Teysmann's suggestion. It was not from Amboina, but from the Aru Islands or from others in the same general region. Native names cited are culit api, eyk, and mockulhäulo. There is little in the description to indicate that it is a *Pittosporum*, and its status is guite undeterminable from the data and the material at present available.

CUNONIACEAE

WEINMANNIA * Linnaeus

WEINMANNIA FRAXINEA Sm. ex D. Don in Edinb. New Philos. Journ. 9 (1830) 93.

Pterophylla fraxinea D. Don l. c.

Cortex papetarius Rumph. Herb. Amb. 3: 212, t. 137.

The type of Weinmannia fraxinea Sm. was from the Moluccas, so that the probabilities are that Teysmann was correct in his reduction of Cortex papetarius Rumph. to Smith's species. Rumphius's figure is an excellent one and is unmistakably a Weinmannia. Linnaeus. Mant. 2 (1771) 510. erroneously reduced it to Dialum indum Linn., in which he was followed by numerous authors. Burman f., Fl. Ind. (1768) 12, considered that it represented a variety of Dialum javanicum Burm. f., which is a synonym of D. indum Linn. Hasskarl, Neue Schlüssel (1866) 68, thought that it might be an Otonuchium=Harpullia (Sapindaceae), with which it has nothing in common, and at the same time quotes Teysmann's opinion that it is Weinmannia fraxinea Sm.

SCHIZOMERIA D. Don

SCHIZOMERIA SERRATA Hochr. in Ann. Conserv. Jard. Bot. Genève 10 (1907) 118.

Acronychia serrata Hochr. Pl. Bogor. Exsicc. (1904) 49.

Tanarius major Rumph. Herb. Amb. 3: 192, t. 122.

Arbor vespertilionum II oppositifolia Rumph. Herb. Amb. 7: 17, t. 10.

Amboina, Robinson Pl. Rumph. Amb. 603, without definite locality or date.

The specimen is a good match for the figure of *Tanarius major* Rumph, and agrees with the description even better than with the figure. Tanarius major Rumph. was discussed by Loureiro,

^{*} Retained name, Vienna Code; Windmannia P. Br. (1756) is older.

Fl. Cochinch. (1790) 231, under Jambolifera resinosa Lour. and has been cited by Don, Henschel, and de Candolle under Cyminosma resinosa Don, but has nothing to do with the species that Loureiro described. The specimen also agrees perfectly with the figure of Arbor vespertilionum Rumph, and with the short description of the second plant included in the description. The major part of the description of Arbor vespertilionum Rumph., that is, the first form described in this chapter, is Helicia serrata R. Br. (see p. 205), and the figure has been referred to Helicia, where it manifestly does not belong. Schizomeria serrata Hochr. is known only from Amboina, was originally described from specimens cultivated in the botanic garden at Buitenzorg, Java, and is very closely allied to the Australian species Schizomeria ovata D. Don, the only other known species of the genus. This is one of the few cases in which Rumphius described and figured the same species twice under entirely different names.

HAMAMELIDACEAE

ALTINGIA Noronha

ALTINGIA EXCELSA Noronha in Verh. Batav. Genootsch. 5° (1795) 9. Lignum papuanum I Rumph. Herb. Amb. 2: 57?

Persoon, Syn. 2 (1807) 579, reduced this to Altingia excelsa Noronha, apparently after Noronha, and Blume reduced it to Liquidamber altingia Bl.=L. altingiana Blume, both synonyms of Altingia excelsa Noronha. It is probable that Rumphius included more than this one species under Lignum papuanum I, especially in view of the fact that Altingia excelsa Noronha does not appear to be definitely known from so far to the east as New Guinea. The form described in the same chapter as Lignum papuanum II, unless referable to Altingia excelsa Noronha, is undeterminable. The identification of Lignum papuanum is based largely on the native name cited by Rumphius, caju rasamala; in Java rasamala is the resin of Altingia excelsa Noronha. The plant Rumphius had in mind may have been entirely different.

ROSACEAE

RUBUS Linnaeus

RUBUS MOLUCCANUS Linn. Sp. Pl. (1753) 1197 (type!).

Rubus moluccus latifolius Rumph. Herb. Amb. 5: 88, t. 47, f. 2.

Amboina, Halong and near the town of Amboina, Robinson Pl. Rumph. Amb. 270, July 16 and 23, 1913, in light forests and open places, altitude about 10 meters, locally known as buan tampayang and daun doeri doeri.

The Rumphian figure and description are the whole basis of *Rubus moluccanus* Linn., but this species has been interpreted by many authors as a polymorphous one and given a range from the Himalayan region to Ceylon, southern China, the Philippines, Malaya, and northeastern Australia. Hooker f., Fl. Brit. Ind. 2 (1878) 330, states:

I am quite unable to arrange the forms of this common and protean plant under recognizable varieties answering to its synonymy.

Focke, in his monograph of the genus Rubus, Bibl. Bot. 17¹ (1910) 89, reproduces the Rumphian figure and limits the species to Amboina. He cites no specimens, gives a short description after data given by Rumphius, and was unable to determine the status of the species in a satisfactory manner. He states:

Die weitere Verbreitung ist völlig unsicher, weil die Art zu ungenügend bekannt ist. Anscheinend gehören hieher Exemplare von Voun auf Neuguinea (leg. Tejsmann) und vielleicht auch von Luzon.

Rubus moluccanus Linn. has been treated by many authors as a collective species, and it is very evident that numerous forms so named in herbaria cannot be properly placed under this species, but must be considered as distinct ones. The Amboina specimens closely match a large series of specimens in the herbarium of the Bureau of Science from various parts of the Philippines and a few specimens from Borneo and Java. is suspected that the typical form will be found to be of wide distribution in the Malay Archipelago. Its exact status can now be definitely determined by a direct comparison with the topotype cited above. All authors have followed Linnaeus in the reduction of the Rumphian figure and description, so that the case is not complicated by synonyms, except as species described by later authors, without reference to Rumphius, may have been reduced to typical Rubus moluccanus Linn.

RUBUS FRAXINIFOLIUS Poir. in Lam. Encycl. 6 (1804) 242, subsp. CELEBICUS (Blume) Focke in Bibl. Bot. 17 2 (1911) 150, f. 63.

Rubus celebicus Blume Bijdr. (1826) 1107.

Rubus parvifolius Linn. Sp. Pl. (1753) 1197 p. p. (quoad syn. Rumph.). Rubus moluccus parvifolius Rumph. Herb. Amb. 5: 88, t. 47, f. 1.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 271, July 23, 1913, hillsides and river banks, altitude 5 to 10 meters.

The Rumphian figure and description were cited by Linnaeus in the original description of Rubus parvifolius, Sp. Pl. (1753)

ROSACEAE 247

1197, but the actual type, on which the description was based and from which the Linnean species must be interpreted, was a specimen collected near Canton, China, by Osbeck. This specimen is the same as Rubus triphyllus Thunb., Fl. Jap. (1784) 215, the name that Focke has adopted for the species. However, Focke is manifestly in error in the selection of this name as the valid one for the species is Rubus parvifolius Linn. (1753) [not R. parviflorus Linn. as cited by Focke, Bibl. Bot. 17 ² (1911) 187]. Rubus fraxinifolius Poir. was described from Javan specimens collected by Commerson and is widely distributed in the Sunda Islands, especially in Java and Sumatra. The subspecies celebicus Focke is widely distributed in the Philippines and in the Moluccas, extending to New Guinea.

PARINARIUM Aublet

PARINARIUM GLABERRIMUM Hassk. in Tijdschr. Nat. Ges. 10 (1843) 147, nomen nudum, Cat. Hort. Bogor. (1844) 269, nomen nudum, Flora 27 (1844) 583.

Parinarium scabrum Hassk. in Tijdschr. Nat. Ges. 10 (1843) 147, nomen nudum, Cat. Hort. Bogor. (1844) 269, nomen nudum, Flora 27 (1844) 585.

Parinarium laurinum A. Gray Bot. Wilkes U. S. Explor. Exped. (1854) 490, t. 55.

Parinarium ellipticum T. & B. Cat. Hort. Bogor. (1866) 253.

Parinarium macrophyllum T. & B. l. c., Nat. Tijdschr. Ned. Ind. 29 (1867) 256.

Parinarium mindanaense Perk, Frag. Fl. Filip. (1904) 119.

Parinarium racemosum Merr. in Govt. Lab. Publ. (Philip.) 17 (1904) 19, non Vid.

Parinarium curranii Merr. in Philip. Journ. Sci. 4 (1910) Bot. 264. Atunus Rumph. Herb. Amb. 1: 171, t. 66.

AMBOINA, Way tommo, Robinson Pl. Rumph. Amb. 273, August 16, 1913, in open forests, altitude about 5 meters, in fruit; Amboina (town), Robinson Pl. Rumph. Amb. 272, November 4, 1913, from a cultivated tree, in flower. Both specimens bear the common name atun.

Atunus of Rumphius has not been previously referred to its proper place in our present system of classification, although Hasskarl, Neue Schlüssel (1866) 22, suggested that it was a Parinarium. It manifestly is Parinarium, and the species very generally known as Parinarium scabrum Hassk., of which numerous synonyms are given above. In citing the above synonyms I have in part followed Koorders and Valeton, Bijdr. Boomsoort. Java 5 (1900) 337, but have also seen authentically named specimens of most of the species I have here reduced. Loureiro, Fl. Cochinch. (1790) 295, mentions it, following the

description of *Stixis scandens* Lour., as apparently belonging in the same genus as that species, but *Atunus* has nothing in common with *Stixis scandens* Lour., which belongs in the *Capparidaceae*. Atunus albus Rumph., l. c. 172, is probably a form of *Parinarium glaberrimum* Hassk.

CONNARACEAE

CONNARUS Linnaeus

CONNARUS sp.

Clompanus funicularis Rumph. Herb. Amb. 5: 70. t. 37, f. 2.

The description and figure are certainly those of a *Connarus*, and perhaps *Clompanus funicularis* Rumph. is the same as *Connarus gaudichaudii* Planch. Lamarck, Encycl. 2 (1786) 52, places it under *Clompanus paniculatus* Aubl., a species based on material from tropical America, and one that has nothing to do with the form that Rumphius figured and described. Miquel, Fl. Ind. Bat. 1¹ (1855) 349, suggested that it might be a species of *Millettia*, where it certainly does not belong.

LEGUMINOSAE

PITHECOLOBIUM * Martius

PITHECOLOBIUM CLYPEARIA (Jack) Benth. in Hook. Lond. Journ. Bot. 3 (1844) 209.

Inga clypearia Jack Malay Miscel. 2 (1822) 78.

Mimosa trapezifolia Roxb. Hort. Beng. (1814) 93, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 546.

Adenanthera circinalis DC. Prodr. 2 (1825) 446 (type!).

Clypearia rubra Rumph. Herb. Amb. 3: 176, t. 112.

AMBOINA, Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 548, October 3, 1913, in light forests, altitude about 285 meters.

In proposing the name Adenanthera falcata Linn., in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 124, Linnaeus referred to it both Clypearia alba and Clypearia rubra as represented by tt. 111 and 112 of Rumphius. I maintain that the name must be typified by the first figure mentioned, that is t. 111, especially in view of the fact that in the Syst. ed. 10 (1759) 1020 and Sp. Pl. ed. 2 (1762) 550 Linnaeus excluded under Adenanthera falcata and A. falcataria the reference to t. 112, Clypearia rubra, limiting the species to Clypearia alba Rumph. t. 111. I have not seen the original description of Inga clypearia Jack, which was based on Sumatran specimens;

^{*} Retained name, Brussels Congress; Zygia Boehm. (1760) is older.

the specific name, however, was unquestionably taken from Rumphius. Prain * cites Inga clypearia Jack as a doubtful synonym of Pithecolobium clypearia Benth., but if Inga clypearia Jack should prove to be different from Pithecolobium clypearia Benth. as currently interpreted, then the specific name will go with Jack's species. Adenanthera circinnalis DC. is based wholly on Clypearia rubra Rumph., and both are cited by Bentham as synonyms of Pithecolobium clypearia (Jack) Benth., in Trans. Linn. Soc. 30 (1875) 580.

ALBIZZIA Durazzini

ALBIZZIA SAPONARIA (Lour.) Blume ex Miq. Fl. Ind. Bat 1 1 (1855) 19.

Mimosa saponaria Lour. Fl. Cochinch. (1790) 653.

Inga saponaria Willd. Sp. Pl. 4 (1805) 1008.

Cortex saponarius Rumph. Herb. Amb. 4: 131, t. 66.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 523, August 13, 1913, on limestone formation, altitude about 30 meters, in flower; Hatiwe, Robinson Pl. Rumph. Amb. 524, September 15, 1913, in forests, altitude about 300 meters, in fruit, locally known as langir.

Mimosa saponaria Lour. was described from a Cochin-China specimen, which has been universally considered, and probably is, identical with the form that Rumphius described. Loureiro also cites the Rumphian plant as representing his species, while Cochin-China material in various herbaria is identical with the common Philippine and Moluccan form of the species.

ALBIZZIA FALCATA (Linn.) Backer comb. nov.

Adenanthera falcata Linn. in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 124, Syst. ed. 10 (1759) 1020 (type!).

Adenanthera falcataria Linn. Sp. Pl. ed. 2 (1762) 550 (type!).

Albizzia moluccana Miq. Fl. Ind. Bat. 1 1 (1855) 26; Koord. in Meded. Lands Plantent. 19 (1898) 419.

Clypearia alba Rumph. Herb. Amb. 3: 176, t. 111.

This species is not represented in our Amboina collections. However, after a very careful study of Rumphius's description I have definitely concluded that the form he described and figured is identical with Albizzia moluccana Miq., a species originally described from leaf specimens only, but of which Koorders has given an ample and detailed description. Mr. Backer in connection with his study of the Leguminosae of Java has independently reached the same conclusion. In all botanical literature the Rumphian Clypearia alba has been cited under Adenanthera falcata Linn. and A. falcataria Linn., both

^{*} Journ. As. Soc. Beng. 66 2 (1897) 274.

being based wholly on Rumphius's description and figure. The description, compiled wholly from Rumphius, is given under one or the other of these names by Burman f., Fl. Ind. (1768) 101, Murr. Syst. (1771) 398, Lam. Encycl. 2 (1786) 76, Pers. Syn. 1 (1805) 461, Willd. Sp. Pl. 2 (1799) 550, DC. Prodr. 2 (1825) 446, Don Gen. Syst. 2 (1832) 399, Dietr. Syn. 2 (1839–52) 1425, Walp. Repert. 5 (1846) 580, Miq. Fl. Ind. Bat. 1 (1855) 47, and Walp. Ann. 4 (1857) 613, yet the status of the species has been very doubtful up to the present time.

ALBIZZIA RETUSA Benth. in Hook. Lond. Journ. Bot. 3 (1844) 90.

Albizzia littoralis T. & B. in Nat. Tijdschr. Ned. Ind. 29 (1866) 259.

Clypearia maritima Rumph. Herb. Amb. 3: 199.

This species is not represented in our Amboina collections. I have very little doubt that this is the correct disposition of *Clypearia maritima*, after the description and data given by Rumphius. Hasskarl, Neue Schlüssel (1866) 66, follows Radermacher in considering it an undetermined species of *Adenanthera*. The species is scattered along the seashore from the Nicobar Islands through Malaya and the Philippines to the Caroline Islands and has been reported from Amboina.

ALBIZZIA PROCERA (Roxb.) Benth. in Hook. Lond. Journ. Bot. 3 (1844) 89.

Mimosa procera Roxb. Pl. Coromandel 2 (1798) 12, t. 121. Lignum murinum majus Rumph. Herb. Amb. 3: 50, t. 28.

Nothing resembling this occurs in our Amboina collections, but I have not the slightest doubt that the plant figured is identical with *Albizzia procera* Benth., which extends from India to tropical Australia. Miquel, Fl. Ind. Bat. 1¹ (1855) 54, has suggested that the Rumphian figure represents an *Albizzia*, but otherwise no other author has suggested an identification of *Lignum murinum*.

The two other forms described, but not figured by Rumphius, l. c. 50, 51, as Lignum murinum minus and Lignum murinum parvifolium, probably also represent species of *Albizzia*, as suggested by Miquel. Their status, however, cannot be definitely determined from data at present available.

Caju ticcos leytimorensis Rumph., Herb. Amb. 3: 52, briefly described by Rumphius, is suggested by Hasskarl, Neue Schlüssel (1866) 50, as a possible synonym of *Albizzia procera* Benth. The description of the pods and of the wood hardly conforms to Roxburgh's species; it probably is an *Albizzia*, but its status must remain doutbful pending further exploration of Amboina.

ALBIZZIA sp.

Clypearia rubra s. sye II Rumph. Herb. Amb. 3: 177.

The description is very brief, following that of *Clypearia rubra*. Hasskarl, Neue Schlüssel (1866) 205, suggests that it may be *Albizzia moluccana* Miq., which I have here reduced to *Albizzia falcata* (Linn.) Backer. Its exact status is indeterminable at the present time, but it is probably a species of *Albizzia*.

ACACIA Linnaeus

ACACIA MANGIUM Willd. Sp. Pl. 42 (1805) 1053 (type!).

Mimosa simplicifolia Linn. var. mangium Poir. in Lam. Encycl. Suppl. 1 (1810) 61.

Acacia holosericea A. Cunn. ex G. Don Gen. Syst. 2 (1832) 407. Mangium montanum Rumph. Herb. Amb. 3: 123, t. 81.

A species based wholly on Rumphius's description and figure. The description, after Rumphius, has been repeated by de Candolle, Prodromus 2 (1825) 451; Don, Gen. Syst. 2 (1832) 403; Miquel, Fl. Ind. Bat. 1¹ (1855) 15; and Bentham, Trans. Linn. Soc. 30 (1875) 495. Bentham thought that it was probably allied to the Australian Acacia holosericea A. Cunn., and I consider his surmise correct; in fact I can detect no differences between Australian specimens and material from the Island of Buru (cult. Buitenzorg I-C-37-K-32). Forster f., Prodr. (1786) 75, referred Mangium montanum Rumph. to Mimosa mangium Forst. f., basing his description, however, on actual specimens from the Friendly Islands, New Caledonia, and New Hebrides. Acacia mangium Willd. was published independently of the earlier Mimosa mangium Forst. f.

ACACIA RUGATA (Lam.) Ham. in Wall. Cat. (1832) no. 5251.

Mimosa rugata Lam. Encycl. 1 (1783) 20.

Mimosa concinna Willd. Sp. Pl. 4 (1805) 1039.

Acacia concinna DC. Prodr. 2 (1825) 464.

Guilandina microphylla DC. Prodr. 2 (1825) 480 (type!).

Nugae silvarum minimae Rumph. Herb. Amb. 5: 95, t. 49, f. 2.

This species is not represented in our Amboina collections. The Rumphian figure is poor, presenting a sterile branch only, but both it and the description conform better to Acacia rugata (Lam.) Ham. than to any other known species, so that the present reduction is probably the correct disposition of it. Burman f., Fl. Ind. (1768) 99, thought it represented a variety of Guilandina nuga Linn. Guilandina microphylla DC. was based wholly on the Rumphian figure and description. Wight and Arnott, Prodr. (1834) 277, reduced it to Acacia concinna DC.

with doubt, while Miquel cites it as a possible synonym of *Acacia hooperiana* Zipp. var. *subcuneata* (Bl.) Miq. Fl. Ind. Bat. 1¹ (1855) 11=*Acacia concinna* DC.=*Acacia rugata* (Lam.) Ham.

MIMOSA Linnaeus

MIMOSA PUDICA Linn. Sp. Pl. (1753) 518.

Herba mimosa Rumph. Herb. Amb. 5: 303.

Amboina, Robinson Pl. Rumph. Amb. 526, July 25, 1913, along small streams near the town of Amboina.

The identification of *Herba mimosa* follows Hasskarl, Neue Schlüssel (1866) 124, which is certainly the correct disposition of it. This weed originated in tropical America and is now found in most hot countries. As noted by Doctor Robinson this was known to Rumphius only by description, but is now fairly common in Amboina.

In the discussion of the various species of plants with sensitive leaves, following Herba sentiens Rumph., Herb. Amb. 5:301, several representatives of the Mimosoideae are briefly described or mentioned, some probably are species of the genus Mimosa. others may belong in allied genera. Following Hasskarl, Neue Schlüssel (1866) 124, 125, Caban cabanan, page 304, may be a Mimosa; Similis planta peruana, page 304, may be Mimosa dormiens HBK.; Altera planta peruana, page 304, may be Mimosa humilis HBK.; Pina hui huitzli, page 304, may be Mimosa casta Linn.; Arbor pudica, page 305, may be Mimosa pudibunda Willd.: while Planta sentiens hispanorum and Herba viva are wholly doubtful. is hardly worth while to consider these forms, as the data given are in most cases quite insufficient on which to base a definite identification of the several forms; and Hasskarl's determinations, as any must be, are for the most part merely guesses. They were not from Amboina and were known to Rumphius by description only.

ADENANTHERA Royen

ADENANTHERA PAVONINA Linn. Sp. Pl. (1753) 384.

Corallaria parvifolia Rumph. Herb. Amb. 3: 173, t. 109.

Amboina, Paso, Robinson Pl. Rumph. Amb. 544, October 29, 1913, along the seashore.

The original reduction of *Corallaria parvifolia* to *Adenanthera* pavonina was made by Linnaeus, in Stickman Herb. Amb. (1754) 14, is the correct disposition of it, and has been consistently followed by all subsequent authors who have had occasion to cite the Rumphian figure.

ENTADA * Adanson

ENTADA PHASEOLOIDES (Linn.) Merr. in Philip. Journ. Sci. 9 (1914) Bot. 86.

Lens phaseoloides Linn. in Stickman Herb. Amb. (1754) 18, Amoen. Acad. 4 (1759) 128 (type!).

Mimosa entada Linn. Sp. Pl. (1753) 518.

Mimosa scandens Linn. Sp. Pl. ed. 2 (1763) 1501.

Entada scandens Benth. in Hook. Lond. Journ. Bot. 4 (1842) 332.

Entada rumphii Scheff. in Nat. Tijdschr. Nederl. Ind. 32 (1871) 412. Faba marina major Rumph. Herb. Amb. 5: 5, t. 4.

AMBOINA, Amahoesoe, Robinson Pl. Rumph. Amb. 528, August, 28, 1913, in flower, growing near the beach; Kati-kati, Robinson Pl. Rumph. Amb. 529, October 7, 1913, in flower and fruit, growing at an altitude of about 80 meters.

The Rumphian plate is the whole basis of Lens phaseoloides Linn., which supplies the oldest valid specific name for this widely distributed species, although the name Lens phaseoloides as published by Linnaeus was probably taken from Burman, Thesaurus Zeylanicus (1737) 139. The original publication in Stickman's Herbarium Amboinense is as follows: "5. Faba marina. Lens phaseoloides; proprii generis." As to the propriety of taking up the generic name Lens in place of Entada, as W. F. Wight proposes,† I have already fully discussed the matter and do not believe that Mr. Wight's proposal merits the approval of botanists. ‡

The form described by Rumphius as Parrana nigra, Herb. Amb. 5:7, may be an *Entada* as suggested by Hasskarl, Neue Schlüssel (1866) 89, but at any rate it is apparently entirely different from *Entada phaseoloides* Merr. The description is too imperfect to warrant definite determination of its proper position.

PARKIA R. Brown

PARKIA SPECIOSA Hassk. in Flora 25 (1842) Beibl. 55.

Arbor pete Rumph. Herb. Amb. 3: 51.

The identification follows Hasskarl, Neue Schlüssel (1866) 50, which is undoubtedly correct, as proved by the native names cited by Rumphius and the indicated uses of the plant.

CYNOMETRA Linnaeus

CYNOMETRA CAULIFLORA Linn. Sp. Pl. (1753) 382.

Cynomorium Rumph. Herb. Amb. 1: 163, t. 62.

Amboina, from cultivated trees in the town of Amboina, Robinson Pl. Rumph. Amb. 530, September 25, 1913, locally known as namu namu.

^{*} Retained name, Brussels Congress; Gigalobium Boehm. (1760) is older.

[†] Contr. U. S. Nat. Herb. 9 (1905) 308.

[‡] Philip. Journ. Sci. 5 (1910) Bot. 33; 9 (1914) Bot. 87.

Cynomorium is one of the few Rumphian species cited by Linnaeus in the first edition of the Species Plantarum (1753) 382, where the reduction to Cynometra cauliflora Linn. was made. This is manifestly the correct disposition of it, and Linnaeus has been consistently followed by all succeeding authors.

CYNOMETRA RAMIFLORA Linn. Sp. Pl. (1753) 382.

Cynomorium silvestre Rumph. Herb. Amb. 1: 167, t. 63.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 531, August 28, 1913, on coral limestone cliffs at low altitudes.

Like Cynomorium, this Rumphian plant was first reduced by Linnaeus in the original description of Cynometra ramiflora Linn., Sp. Pl. (1753) 382. Linnaeus includes in Cynometra ramiflora the form with a single pair of leaflets, the Amboina plant, and the form with two pairs of leaflets, Iripa of Rheede, apparently the form described by Thwaites as Cynometra ramiflora Linn. var. heterophylla Thw. The present form, with a single pair of leaflets, has very generally been interpreted as typical Cynometra ramiflora Linn., and has been indicated by Prain as var. genuina, Journ. As. Soc. Beng. 66 ² (1897) 198.

SINDORA Miquel

SINDORA GALEDUPA Prain in Journ. As. Soc. Beng. 66² (1897) 483 (type!).

Sindora inermis Merr. in Philip. Journ. Sci. 10 (1915) Bot. 314? Caju galedupa Rumph. Herb. Amb. 2: 59, t. 13.

This species is not represented in our Amboina collections. The material on which the description was originally based was from Celebes and from the small islands of Saleyer and Calaua. It grows near the sea and is locally known as caju galedupa. Lamarck, Encycl. 2 (1788) 594, cites the Rumphian figure and description as a synonym of Galedupa indica, but Galedupa indica Lam. as described from Sonnerat's specimens is Pongamia glabra Vent.=P. pinnata (Linn.) Merr. Hamilton, Mem. Wern. Soc. 6 (1832) 291, thought that it might be a species of Copaifera. Wight and Arnott, Prodr. 1 (1834) 262, placed it in Pongamia, with doubt. Walpers, Ann. 4 (1857) 581, and Miquel, Fl. Ind. Bat. 11 (1855) 144, erroneously cite it as a synonym of Derris forsteniana Blume. Linnaeus, in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 120, placed it under Connarus with doubt, but did not refer it to Connarus monocarpus Linn, as indicated by Hasskarl, Neue Schlüssel (1866) 28. Prain has certainly placed it in its correct genus,

and Sindora galedupa Prain is based wholly on Rumphius. The exact status of the species still remains uncertain, but it is manifestly very near Sindora coriacea Prain and S. inermis Merr. Prain thought that Sindora sumatrana Miq. var. javanica Koord. & Valeton might be a synonym of Sindora galedupa. I suspect that Sindora inermis Merr. will have to be reduced to Sindora galedupa Prain, when botanical material from the Moluccas is available for comparison. The type of my species was from back of the mangrove swamp at Sarangani, southern Mindanao, there known as gayugalo, a native name that is certainly suggestive of caju galedupa. It differs from the Rumphian plant in having six rather than eight leaflets, perhaps also in having slightly larger pods, while Rumphius does not figure or describe the prominent aciniciform stipules that are characteristic of Sindora inermis Merr.

TAMARINDUS Linnaeus

TAMARINDUS INDICA Linn. Sp. Pl. (1753) 34.

Tamarindus Rumph. Herb. Amb. 2: 90, t. 23.

Amboina, Robinson Pl. Rumph. Amb. 549, December 1, 1913, from cultivated trees, locally known as assam.

This widely distributed and well-known species hardly needs discussion. Linnaeus referred the Rumphian figure to his species, in Stickman Herb. Amb. (1754) 9, in which he has been followed by all succeeding authors.

INTSIA Thouars

INTSIA BIJUGA (Colebr.) O. Kuntze Rev. Gen. Pl. 1 (1891) 192.

Macrolobium bijugum Colebr. in Trans. Linn. Soc. 12 (1819) 359, t. 17.
Afzelia bijuga A. Gray Bot. Wilkes U. S. Explor. Exped. (1854) 467, t. 51.

Outea bijuga DC. Prodr. 2 (1825) 511.

Intsia amboinensis DC. Prodr. 2 (1825) 509 (type!).

Macrolobium amboinense Teysm. ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 189 (type!).

Metrosideros amboinensis Rumph. Herb. Amb. 3: 21, t. 10.

This species is not represented in our Amboina collections, yet the identity of *Metrosideros amboinensis* Rumph., at least for the most part, with the plant commonly known as *Intsia* (*Afzelia*) bijuga O. Kuntze is certain. Loureiro, Fl. Cochinch. (1790) 266, cites it with doubt under *Baryxylum rufum*, but *Baryxylum rufum* Lour. manifestly belongs in the genus *Peltophorum*; see Pierre, Fl. Forest. Cochinch. 4: sub. t. 390. Loureiro's description of the flowers applies to *Peltophorum*, of the fruits perhaps to *Intsia*; his specimen in the herbarium of the British Museum

is a *Peltophorum*. Possibly more than one species of *Intsia* are included in the description of *Metrosideros amboinensis*, but it is certainly for the most part the common and widely distributed *Intsia bijuga* O. Kuntze. The figure is poor. The description and figure are the whole basis of *Intsia amboinensis* DC. and of *Macrolobium amboinense* Teysm., the latter not appearing in Index Kewensis.

BAUHINIA Linnaeus

BAUHINIA LINGUA DC. Prodr. 2 (1825) 516 (type!), excl. syn. Linn.

Phanera? lingua Miq. Fl. Ind. Bat. 11 (1855) 67.

Folium linguae Rumph. Herb. Amb. 5: 1, t. 1.

Amboina, Soja and Negri lama, Robinson Pl. Rumph. Amb. 522, August, 1913, in fruit, locally known as tabla mulu.

Folium linguae Rumph. was originally and erroneously reduced by Linnaeus to the Indian Bauhinia scandens Linn., in Stickman Herb. Amb. (1754) 18, Amoen. Acad. 4 (1759) 128, Syst. ed. 10 (1859) 1015, Sp. Pl. ed. 2 (1762) 535, in which he was followed by numerous authors. Loureiro, however, Fl. Cochinch. (1790) 37, cited it under Phanera coccinea Lour., the type of which was a Cochin-China plant. Bauhinia lingua de Candolle is typified by Folium linguae Rumph., the specific name and description being taken wholly from Rumphius. Curiously, de Candolle cites as a synonym Bauhinia scandens Linn., Sp. Pl. ed. 1, p. 374, "excl. Rheed. syn.," yet Rheede's description and figure are the whole basis of the Linnean species, for the first reference given by Linnaeus to Ray Suppl. 328 is based wholly on Rheede.

The Amboina specimen is in fruit, but the species manifestly belongs in the section *Phanera*, as is shown by Rumphius's description of the stamens. I have not been able definitely to refer the Amboina specimens to any other described species than *Bauhinia lingua* DC., although it seems probable that the same form has been described under another specific name or names. De Candolle's description calls for a specimen with 3-nerved leaf-lobes, as they are thus presented in most of the leaves in Rumphius's figure. However, the actual specimens have mostly 5- or 6-nerved lobes.

BAUHINIA sp.

Folium linguae litorea alba Rumph. Herb. Amb. 5: 2.

This form is not represented in our Amboina collections. Hasskarl, Neue Schlüssel (1866) 88, suggests that it may be *Phanera glauca* Benth.=*Bauhinia glauca* Wall., but the cor-

rectness of this reduction is very improbable. Doubtless a future exploration of Amboina will yield material that will definitely determine its status.

DIALUM Linnaeus

DIALUM INDUM Linn. Mant. 1 (1767) 24.

Tamarindus altera Rumph. Herb. Amb. 2: 93.

From the native names cited by Rumphius, carandje and carandjang, and the references cited, this is Dialum indum Linn., but the Javan specimens in Rumphius's garden may not have been this species. It was from Java, not from Amboina. Bennett and Miquel both reduce it to Dialum indum Linn.

CASSIA Linnaeus

CASSIA MIMOSOIDES Linn. Sp. Pl. (1753) 379.

Amoena moesta Rumph. Herb. Amb. 6: 147, t. 67. f. 1.

Amboina, Batoe gadjah and Soja road, Robinson Pl. Rumph. Amb. 535, August 5, 1913, on grassy hillsides, altitude 200 to 250 meters.

Amoena moesta was originally reduced by Linnaeus, in Stickman Herb. Amb. (1754) 28, with doubt, to Cassia procumbens Linn., and later, Amoen. Acad. 4 (1759) 135, Syst. ed. 10 (1759) 1018, to Cassia nictitans Linn., both American species; both reductions are erroneous. De Candolle, Prodromus 2 (1825) 505, reduced it correctly to Cassia angustissima Lam., but Lamarck's species is a synonym of Cassia mimosoides Linn. or at most represents merely a variety of it, C. mimosoides Linn. var angustissima (Lam.) Walp.

CASSIA ALATA Linn. Sp. Pl. (1753) 378.

Herpetica alata Raf. Sylv. Tellur. (1838) 123.

Cassia alata Linn. var. rumphiana DC. Prodr. 2 (1825) 492 (type!). Herpetica Rumph. Herb. Amb. 7: 35, t. 18.

Amboina, in a sago swamp near the town of Amboina, Robinson Pl. Rumph. Amb. 546, July 25, 1913.

The reduction of *Herpetica* to *Cassia alata* was originally made by Linnaeus, Amoen. Acad. 4 (1759) 136, is the correct disposition of it, and has been accepted by all authors.

CASSIA TORA Linn. Sp. Pl. (1753) 376.

Cassia obtusifolia Linn. Sp. Pl. (1753) 377.

Gallinaria rotundifolia Rumph. Herb. Amb. 5: 283, t. 97, f. 2.

Amboina, Batoe merah, Robinson Pl. Rumph. Amb. 525, August 15, 1913, at low altitudes near the seashore; also Rel. Robins. 2480 from Boeton Island, July 13, 1913.

A weed of pantropic distribution, originating in tropical 144971—17

America. Linnaeus reduced the Rumphian figure to both his Cassia tora and Cassia obtusifolia, the latter being a synonym of the former. It is considered as Cassia tora Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1016, and as Cassia obtusifolia Linn. in his Species Plantarum, ed. 2 (1762) 539. The early authors, following Linnaeus for the most part, considered it as Cassia obtusifolia Linn., but practically all recent authors have properly placed it under Cassia tora Linn.

CASSIA OCCIDENTALIS Linn. Sp. Pl. (1753) 377.

Gallinaria acutifolia Rumph. Herb. Amb. 5: 283, t. 97, f. 1.

AMBOINA, along the beach near the town of Amboina, Robinson Pl. Rumph. Amb. 534, August 8, 1913; also represented by Rel. Robins. 2519 from Bali Island, July 7, 1913.

Linnaeus originally reduced *Gallinaria acutifolia* to *Cassia sophera* Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1017, Sp. Pl. ed. 2 (1762) 542, in which he was consistently followed by all early authors. Vogel, Hasskarl, and Miquel, however, have correctly placed it as *Cassia occidentalis* Linn., which, like the preceding species, is a pantropic weed of American origin.

CASSIA GLAUCA Lam. Encycl. 1 (1785) 647. Flos flavus Rumph. Herb. Amb. 4: 63, t. 23.

This species is not represented in our Amboina collections. The figure, however, is unmistakably that of Cassia glauca Lam., where it was definitely placed by Miquel and by Hasskarl. Burman f., Fl. Ind. (1768) 96, erroneously reduced it to Cassia planisiliqua, or at least Cassia planisiliqua Burm. f. is entirely different from Cassia planisiliqua Linn. Lamarck, Encycl. 1 (1785) 644, suggests its comparison with Cassia chinensis Lam., but it certainly is not this, although the exact status of Cassia chinensis Lam. is doubtful; from the description it may be Cassia occidentalis Linn., although Bentham thought it might be Cassia sophera Linn.

CASSIA SOPHERA Linn. Sp. Pl. (1753)-379. Soffera Rumph. Herb. Amb. 4: 55.

This species is not represented in our Amboina collections. The plant described by Rumphius is probably the common and widely distributed *Cassia sophera* Linn., as indicated by Hasskarl, Neue Schlüssel (1866) 75.

CASSIA FISTULA Linn. Sp. Pl. (1753) 377.

Cathartocarpus fistula Pers. Syn. 1 (1805) 459. Cassia fistula Rumph. Herb. Amb. 2: 83, t. 21.

This common species is not represented in our Amboina collections, but it is so well known that it hardly needs discussion. Rumphius's plate is good. It was first reduced by Linnaeus, in Stickman Herb. Amb. (1754) 9, and has been consistently cited under *Cassia fistula* Linn. by all subsequent authors.

CASSIA JAVANICA Linn. Sp. Pl. (1753) 379.

Canna fistula javanica Rumph. Herb. Amb. 2: 86. Cassia fistula silvestris Rumph. Herb. Amb. 2: 88, t. 22.

This species is not represented in our Amboina collections. There is very little doubt, however, that the first of the Rumphian names cited above is referable to Cassia javanica, although Cassia fistula silvestris may include two different species. The reduction of t. 22 to Cassia javanica Linn. was first made by Lamarck, Encycl. 1 (1785) 649, and has been very generally accepted. Roxburgh, Fl. Ind. ed. 2, 2 (1832) 337, referred it to Cassia bacillus Gaertn., which, however, is generally considered to be a synonym of Cassia javanica Linn. Other names involved in the reduction are Cassia marginata Roxb. and C. nodosa Ham.

The plants briefly discussed by Rumphius, op. cit. 89, under the names bilalangh, cajudju, and ke ule are indeterminable from data at present available. Hasskarl, Neue Schlüssel (1866) 30, has suggested that the second one may be a Pterocarpus and that the other two may be referable to Cassia. The only logical method of determining these forms is to carry on field work with special reference to the native names.

CAESALPINIA Linnaeus

CAESALPINIA SAPPAN Linn. Sp. Pl. (1753) 381.

Lignum sappan Rumph. Herb. Amb. 4: 56, t. 21.

Amboina, Waë, Robinson Pl. Rumph. Amb. 568, November 26, 1913, cultivated, locally known as lolan tuni.

This well-known species hardly needs discussion. *Lignum sappan* was originally reduced to *Caesalpinia sappan* Linn. by Linnaeus, in Stickman Herb. Amb. (1754) 15, and has been consistently so cited by all other authors who have had occasion to quote Rumphius.

CAESALPINIA PULCHERRIMA (Linn.) Sw. Obs. (1791) 166.

Poinciana pulcherrima Linn. Sp. Pl. (1753) 380. Crista pavonis Rumph. Herb. Amb. 4: 53, t. 20.

AMBOINA, Robinson Pl. Rumph. Amb. 542, September, 1913, from cultivated plants in the town of Amboina, including both the red and yellow and the yellow-flowered forms.

This commonly cultivated plant, of tropical American origin, is well figured by Rumphius. *Crista pavonis* was first reduced by Linnaeus, to *Poinciana pulcherrima*, in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1018; but in the second edition of his Species Plantarum (1762) 544, he erroneously referred it to *Poinciana bijuga* Linn.

CAESALPINIA CRISTA Linn. Sp. Pl. (1753) 380, pro majore parte, excl. Fl. Zeyl. 157 quoad Herm. zeyl. 12.

Guilandina bonducella Linn. Sp. Pl. ed. 2 (1762) 545.

Guilandina bonduc Linn. Sp. Pl. (1753) 381, p. p., excl. Fl. Zeyl. 156.

Caesalpinia bonducella Flem. Asiat. Res. 11 (1810) 159.

Guilandina crista Small Fl. Southeast. U. S. (1905) 591.

Guilandina bonduc Linn. var. minus DC. Prodr. 2 (1825) 480.

Caesalpinia jayabo var cyanosperma Maza in Anal. Soc. Esp. Hist. Nat. 19 (1890) 234.

Frutex globulorum majorum Rumph. Herb. Amb. 5: 92, t. 49, f. 1.

The widely distributed plant commonly known as Caesalpinia bonducella Flem, is not represented in our Amboina collections. There is no question whatever as to the identity of the plant Rumphius figures, as his illustration is an excellent one. synonymy, like that of Caesalpinia jayabo Maza (C. bonduc auctt.), is exceedingly complicated and was first adjusted by Urban, Symb. Antil. 2 (1900) 269. I agree with Doctor Urban in the application of the Linnean name in spite of the fact that the first reference given by Linnaeus in the original description of the species applies to the plant commonly known as Caesalpinia nuga (Linn.) Ait., as originally pointed out by Trimen, Fl. Ceyl. 2 (1894) 99; see under Caesalpinia nuga Ait., infra, page 261. Skeels, Science N. S. 37 (1913) 921, would interpret Fl. Zeyl. 157 strictly on the basis of Hermann zeyl. 12, as the type of Caesalpinia crista Linn., thus making the species exactly the same as Caesalpinia nuga (Linn.) Ait., reducing the latter as a synonym. At the same time he would interpret Fl. Zeyl. 156 as the type of Guilandina bonduc Linn., thus making Caesalpinia bonduc the proper name for the plant described in most botanical works as Caesalpinia bonducella Flem.

CAESALPINIA JAYABO Maza in Anal. Soc. Esp. Hist. Nat. 19 (1890) 234.

Guilandina bonduc Linn. Sp. Pl. (1753) 381, p. p., quoad Fl. Zeyl. 156. Caesalpinia bonduc auctt.

Guilandina bonduc Linn. var. majus DC. Prodr. 2 (1825) 480.

Guilandina major Small Fl. Southeast. U. S. (1903) 591.

Caesalpinia glabra Merr. in Philip. Journ. Sci. 5 (1910) Bot. 54, non Guilandina glabra Mill.

Frutex globulorum femina Rumph. Herb. Amb. 5: 89, t. 48.

Amboina, Waë, Robinson Pl. Rumph. Amb. 564, November 25, 1913, climbing over trees at low altitudes.

The reduction of Frutex globulorum femina was first made by Linnaeus, who placed it as a synonym of Guilandina bonduc Linn, in his Species Plantarum ed. 2 (1762) 545, and most authors have been content to accept this name as the proper one for the species. The synonymy is very complicated, but Guilandina bonduc Linn. as originally published by Linnaeus in 1753 is for the most part identical with G. bonducella Linn. as published by Linnaeus in the year 1762, and both are, for the most part, the same as Caesalpinia crista Linn. 1753. synonymy has been very fully discussed by Urban, Symb. Antil. 2 (1900) 269, 272. Guilandina bonduc Linn. var. majus DC. was based on the Linnean description, as given in the second edition of the Species Plantarum, and the figure of Rumphius cited above and in turn is the basis of Guilandina major Small. Guilandina glabra Mill. is an entirely different species, if Miller's short description be correct, and I erred in 1910 in proposing to take up this specific name. It is apparent that Maza's specific name Caesalpinia jayabo is the earliest valid one for this pantropic plant. Caesalpinia bonduc Roxb., based on Guilandina bonduc Linn., is certainly untenable and should be abandoned.

CAESALPINIA NUGA (Linn.) Ait. Hort. Kew. ed. 2, 3 (1811) 32.

Guilandina nuga Linn. Sp. Pl. ed. 2 (1762) 546 (type!).

Caesalpinia crista Linn. Sp. Pl. (1753) 380, pro minore parte, Fl. Zeyl. 157 quoad Herm. zeyl. 12.

Nugae silvarum litoreae et terrestres Rumph. Herb. Amb. 5: 94, t. 50.

AMBOINA, Eri, Robinson Pl. Rumph. Amb. 539, September 22, 1913, along the seashore; Amahoesoe, Robinson Pl. Rumph. Amb. 538, August 13, 1913, in thickets at an altitude of about 30 meters, locally known as galachi and pohon baduri.

The Rumphian reference is the whole basis of *Guilandina* nuga Linn.=Caesalpinia nuga (Linn.) Ait. and has been interpreted as such by all authors. In this connection it is to be noted that Caesalpinia crista Linn., Sp. Pl. (1753) 380, is, in part, the same as Caesalpinia nuga Ait. The first reference in the original description of the species is to Fl. Zeyl. No. 157,

and Hermann's specimen is not Caesalpinia crista Linn. as currently interpreted, but is C. nuga Ait.; see Trimen, Fl. Ceyl. 2 (1894) 99. However, the other references in the Species Plantarum and the first reference in the Flora Zeylanica, Pluk. Alm. 4. t. 2 f. 2, are apparently Caesalpinia crista Linn. as generally understood, so that Caesalpinia crista Linn. is here maintained for the plant so described by all authors; see page 260.

ORMOSIA * Jackson

ORMOSIA CALAVENSIS Azaola ex Blanco Fl. Filip. ed. 2 (1845) 230.

Pongamia (?) corallaria Miq. Fl. Ind. Bat. 1 (1855) 149 (type!).

Corallaria latifolia Rumph. Herb. Amb. 3: 175, t. 110.

This characteristic species is not represented in our Amboina collections. The reduction to *Ormosia calavensis* Azaola is made after a careful study of Rumphius's figure and description and a comparison with a very full series of specimens from northern Luzon to southern Mindanao and from the Palau Islands. *Corallaria latifolia* is the whole basis of *Pongamia corallaria* Miq., so this specific name is available should future botanical exploration of the Moluccas yield material that shows the plant Rumphius described to be specifically distinct from that of the Philippine and the Palau Islands. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 63, referred it to the genus *Macropteris*, this being a synonym of *Ormosia*.

SOPHORA Linnaeus

SOPHORA TOMENTOSA Linn. Sp. Pl. (1753) 373.

Anticholerica Rumph. Herb. Amb. 4: 60. t. 22.

AMBOINA, Paso, $Robinson\ Pl.\ Rumph.\ Amb.\ 545,$ October 31, 1913, along the seashore.

Anticholerica of Rumphius has been confused by most authors, following Linnaeus, with Sophora heptaphylla Linn. It is typical Sophora tomentosa Linn. It was originally reduced by Linnaeus to Sophora heptaphylla, in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1015, Sp. Pl. ed. 2 (1762) 533, in which he was followed by all authors up to 1825, when de Candolle, Prodromus 2: 96, suggested that the Rumphian figure referred to Sophora tomentosa Linn. Sophora heptaphylla Linn. is in itself a mixture. The type is Fl. Zeyl. 104, and Hermann's specimen on which it is based is Derris sinuata Benth.—Derris heptaphylla (Linn.) Merr., page 273.

^{*} Retained name, Vienna Code; Toulichiba Adans. (1763) is older.

CROTALARIA Linnaeus

CROTALARIA RETUSA Linn. Sp. Pl. (1753) 715.

Crotalaria I major Rumph. Herb. Amb. 5: 278, t. 96, f. l.

Amboina, Hatiwe, Robinson Pl. Rumph. Amb. 547, September 4, 1913, near the seashore; also represented by Rel. Robins. 2464 from Macassar, Celebes.

The reduction of the form of *Crotalaria* figured by Rumphius to *Crotalaria retusa* Linn. was first made by Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1159, Sp. Pl. ed. 2 (1763) 1004, and is certainly the correct disposition of it.

CROTALARIA QUINQUEFOLIA Linn. Sp. Pl. (1753) 716.

Crotalaria II minor Rumph. Herb. Amb. 6: 278.

This species is not represented in our Amboina collections. The reduction of the Rumphian description follows Hasskarl, Neue Schlüssel (1866) 121, which is manifestly the correct disposition of it.

CROTALARIA CHINENSIS Linn. Syst. ed. 10 (1759) 1158.

Crotalaria III agrestis Rumph. Herb. Amb. 5: 297.

Amboina, Soja road, $Robinson\ Pl.\ Rumph\ Amb.\ 468$, August 1, 1913, on grassy hillsides, altitude about 200 meters.

The identity of the recently collected material with *Crotalaria III agrestis* is somewhat doubtful, as Rumphius's description is short and imperfect. It cannot possibly be *Crotalaria verrucosa* Linn., as placed by Hasskarl, Neue Schlüssel (1866) 121.

CROTALARIA LINIFOLIA Linn. f. Suppl. (1781) 322.

Phaseolus montanus III Rumph. Herb. Amb. 6: 146.

This suggested identification of *Phaseolus montanus III* is scarcely more than a guess, but the description, with a slight modification of the Latin translation, seems to apply very closely to the form of *Crotalaria linifolia* Linn. f. described by Vogel as *C. stenophylla* and by Matsumura as *C. formosana*. In the Dutch description the fruits are described as "met twee ruggens," which I translate "with two ridges." The Latin description reads "cum binis alis," translated by Hasskarl as "bialatis." With the modification of the description suggested by translating "ruggens" as "ridges" instead of as "wings," there is nothing in the entire description that does not apply to *Crotalaria stenophylla* Vogel.

Phaseolus montanus IV Rumph. l. c. is apparently but a dwarfed form of Crotalaria linifolia Linn. f.

INDIGOFERA Linnaeus

INDIGOFERA TINCTORIA Linn. Sp. Pl. (1753) 751.

Indicum Rumph. Herb. Amb. 5: 220, quoad descr. (excl. t. 80=I.
suffruticosa Mill.).

Probably both Indigofera tinctoria Linn. and I. suffruticosa Mill. (I. anil Linn.) are included in the Rumphian discussion of Indicum, but the description of the pods as "digiti articulum longae" applies unmistakably to Indigofera tinctoria Linn., not to I. suffruticosa Mill. The figure, however, unmistakably represents Indigofera suffruticosa Mill., as shown by the relatively short, strongly curved pods. Indicum was reduced by Linnaeus to Indigofera tinctoria Linn., in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1171, Sp. Pl. ed. 2 (1763) 1061, in which he has been followed by most authors. Lamarck, Encycl. 3 (1789) 244, referred it to Indigofera anil Linn.=I. suffruticosa Mill., which is the correct disposition of the figure. Other authors have referred it to Indigofera anil Linn. var. orthocarpa DC., I. tinctoria Linn. var. macrocarpa DC., and I. tinctoria Linn. var. brachycarpa DC.

INDIGOFERA SUFFRUTICOSA Mill. Gard. Dict. ed. 8 (1768) no. 2.

Indigofera anil Linn. Mant. 2 (1771) 272. Indicum Rumph. Herb. Amb. 5: quoad t. 80.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 195, August 8, 1913, near the seashore.

This is the form figured by Rumphius, but so far as the description goes the essential characters by which *Indigofera* tinctoria Linn. and *I. suffruticosa* Mill. are distinguished are those of the former species. As indicated above probably both are included in the general discussion of *Indicum*.

The several forms briefly described under *Indicum* I consider to be indeterminable, although Hasskarl, Neue Schlüssel (1866) 113, indicates their possible positions as follows: Indicum silvestre Rumph. Herb. Amb. 5: 222=Indigofera sp.?; Indicum silvestre e Madagascar Rumph. l. c. 223=Indigofera linifolia Retz. var. angustissima Miq.?; Indicum brasilianum Rumph. l. c. 224=Indigofera sp.?; Indicum spurium Rumph. l. c. 224=Indigofera celebica Miq.?.

TEPHROSIA * Persoon

TEPHROSIA sp. aff. T. purpurea Pers.

Phaseolus montanus I Rumph. Herb. Amb. 6: 146.

No representative of the genus *Tephrosia* occurs in our Amboina collections. The plant described by Rumphius, however,

^{*} Retained name, Vienna Code; Cracca Linn. (1763) is older.

is manifestly a *Tephrosia*, and it is probably a form of the widely distributed *T. purpurea* Pers. Hasskarl, Neue Schlüssel (1866) 176, considers that it represents a species near *Tephrosia timoriensis* DC., but de Candolle's species is generally considered to be a synonym of *T. purpurea* Pers.

Phaseolus montanus alter Rumph., l. c. 146, may also represent a species of *Tephrosia*. The description, however, is too short and imperfect to warrant an identification of it with the data now available.

SESBANIA * Persoon

SESBANIA SESBAN (Linn.) Merr. in Philip. Journ. Sci. 7 (1912) Bot. 235.

Aeschynomene sesban Linn. Sp. Pl. (1753) 714.

Coronilla sesban Willd. Sp. Pl. 3 (1806) 1147.

Sesban aegyptiacus Poir. in Lam. Encycl. 7 (1806) 128 (type!).

Aeschynomene moluccana Kostel. Allg. Med.-Pharm. Flora 4 (1835) 1285.

Emerus sesban O. Kuntze Rev. Gen. Pl. 1 (1891) 180.

Gajatus niger Rumph. Herb. Amb. 4: 64, t. 24.

This species is not represented in our Amboina collections. The Rumphian figure was erroneously reduced by Linneaus to Aeschynomene indica Linn., in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1158, Sp. Pl. ed. 2 (1763) 1061, in which he was generally followed by the older authors. Wight and Arnott, Prodr. (1834) 219, placed it under Aeschynomene roxburghii Spreng., a synonym of A. indica Linn. It is apparently the type of Aeschynomene moluccana Kostel. (publication not seen by me). Miquel, Fl. Ind. Bat. 11 (1855) 287, thought it might be referable to Sesbania cochinchinensis (Lour.) DC., which is probably a synonym of Sesbania sesban (Linn.) Merr. Teysmann correctly placed it as a synonym of Sesbania aegyptiaca Pers., which manifestly is a synonym of Sesbania sesban (Linn.) Merr. From Rumphius's description it is exactly the form described by Wight and Arnott, Prodr. (1834) 214, as Sesbania aegyptiaca Pers. var. bicolor W. & A.†

SESBANIA CANNABINA (Retz.) Pers. Syn. 2 (1807) 316.

Aeschynomene cannabina Retz. Obs. 5 (1789) 26.

Agati cannabina Desv. Journ. Bot. 1 (1813) 120.

Gajatus luteus Rumph. Herb. Amb. 4: 64.

This species is not represented in our Amboina collections.

^{*} Retained name, Brussels Congress; Sesban Adans. and Agati Adans. (1763) are older.

[†] See Prain in Journ. As. Soc. Beng. 662 (1897) 367.

Hasskarl, Neue Schlüssel (1866) 76, discusses it under Aeschynomene indica Linn. var. aspera Hassk. and under Sesbania polyphylla Miq. The Rumphian description calls for a plant with larger leaves and longer pods than Gajatus niger (Sesbania sesban Merr.) and with yellow flowers, and I believe that the plant described is unmistakably Sesbania cannabina (Retz.) Pers. It was introduced into Amboina in Rumphius's time. The form from Bali with white flowers, merely mentioned by Rumphius, is indeterminable, the only character given being that the flowers are white.

SESBANIA GRANDIFLORA (Linn.) Pers. Syn. 2 (1807) 316.

Robinia grandiflora Linn. Sp. Pl. (1753) 722.

Aeschynomene grandiflora Linn. Sp. Pl. ed. 2 (1763) 1060.

Coronilla grandiflora Willd. Sp. Pl. 3 (1800) 1145.

Agati grandiflora Desv. in Journ. Bot. 1 (1813) 120, t. 4, f. 6.

Turia Rumph. Herb. Amb. 1: 188, t. 76.

Turia minor Rumph. Herb. Amb. 1: 190, t. 77.

Amboina, Binting, Robinson Pl. Rumph. Amb. 532, September 27, 1913, at low altitudes, locally known as turi.

Turia was originally reduced by Linnaeus to Aeschynomene grandiflora Linn. in his Species Plantarum, ed. 2 (1763) 1060, and the figure has very generally been cited by various authors under one or the other of the synonyms cited above. Turia minor Rumph. is the form with reddish or purplish flowers, considered by early authors to represent a distinct species, Sesbania coccinea (Linn. f.) Pers. (Aeschynomene coccinea Linn. f., Coronilla coccinea Willd., Sesban coccinea Poir., Agati coccinea DC.), and by others considered as merely a variety of Sesbania grandiflora Pers. It is manifestly but a color form of the common and widely distributed Sesbania grandiflora (Linn.) Pers.

ORMOCARPUM * de Candolle

ORMOCARPUM ORIENTALE (Spreng.) comb. nov.

Parkinsonia orientalis Spreng. Syst. 4 (1827) Cur. Post. 170 (type!). Ormocarpum glabrum Teysm. & Binn. in Tijschr. Ned. Ind. 27 (1854) 56.

Solulus arbor Rumph. Herb. Amb. 3: 200, t. 128.

This species is not represented in our Amboina collections, but according to Rumphius the plant is not a native of Amboina, occurring there as an introduced and planted one. Loureiro, Fl. Cochinch. (1790) 454, cites Solulus arbor as representing his Diphaca cochinchinensis=Ormocarpum cochinchinense (Lour.)

^{*} Retained name, Vienna Code; Diphaca Lour. (1790) is older.

Merr. (O. sennoides DC.), but the Rumphian figure and description manifestly apply to Ormocarpum glabrum T. & B. The oldest specific name, however, if this form be maintained as distinct from Ormocarpum cochinchinense, is that supplied by Parkinsonia orientale Spreng., which was based wholly on the Rumphian figure and description.

ARACHIS Linnaeus

ARACHIS HYPOGAEA Linn. Sp. Pl. (1753) 741.

Chamaebalanus japonica Rumph. Herb. Amb. 5: 426, t. 156, f. 2.

The common peanut is not represented in our Amboina collections, although doubtless it is still cultivated there as it is in most warm countries. The reduction of the Rumphian figure was first made by Linnaeus, in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1167, which has been followed by all authors except Loureiro, who proposed to call it *Arachis asiatica* Lour., Fl. Cochinch. (1790) 430. Loureiro's species is manifestly a synonym of *Arachis hypogaea* Linn.

DESMODIUM * Desvaux

DESMODIUM ORMOCARPOIDES DC. Prodr. 2 (1825) 327, non auct. plur.

Desmodium ormocarpoides Desv. in Mém. Soc. Linn. Paris 1825 (1826) 307, non auct. plur.

Hedysarum adhaerens Poir. in Lam. Encycl. Suppl. 5 (1817) 15, non Vahl.

Desmodium dependens Blume ex Miq. Fl. Ind. Bat. 11 (1855) 248.

Phaseolus montanus Rumph, Herb. Amb. 6: quoad t. 66 p. p. (excl. descr.!).

Amboina, Way tommo, Robinson Pl. Rumph. Amb. 555, August 16, 1913. in light woods at low altitudes; Amahoesoe, Pl. Rumph. Amb. 556, August 30, 1913, at low altitudes, locally known as rumpit makal.

The plant figured by Rumphius does not agree with any of the eight forms described under the name *Phaseolus montanus*. Burman f., Fl. Ind. (1768) 164, referred the figure to *Hedysarum gangeticum* Linn.=*Desmodium gangeticum* (Linn.) DC., in which he was followed by numerous authors; this reduction, however, is entirely wrong. The figure is, for the most part, an excellent representation of *Desmodium dependens* Blume, which was originally described from specimens originating in the Moluccas and in New Guinea, which Gagnepain, Not. Syst. 3 (1916) 256, has recently shown to be exactly the form described by de Candolle and by Desvaux as *Desmodium ormocarpoides*,

^{*} Retained name, Vienna Code; Meibomia Adans. (1763) is older.

a species that has consistently been misinterpreted by modern authors on account of de Candolle's original insufficient description. The drawing apparently represents two species. The infructescence and fruits shown on the right-hand branch are distinctly different from those shown on the left-hand branch; the former is apparently Desmodium ormocarpoides auct., non DC.=Desmodium zonatum Miq.,* and the latter is typical D. ormocarpoides DC. (D. dependens Blume).

DESMODIUM UMBELLATUM (Linn.) DC. Prodr. 2 (1825) 325.

Hedysarum umbellatum Linn. Sp. Pl. (1753) 747.

Aeschynomene arborea Linn. Sp. Pl. (1753) 713, non Desmodium arboreum Sweet.

Dendrolobium umbellatum W. & A. ex Benth. Pl. Jungh. (1852) 216. Meibomia umbellata O. Kuntze Rev. Gen. Pl. 1 (1891) 197.

Folium crocodili latifolium Rumph. Herb. Amb. 4: 112, t. 52.

Folium crocodili parvifollum Rumph. l. c. 113.

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 560, October 21, 1913, along the seashore; Ayer putri, Robinson Pl. Rumph. Amb. 559, July 28, 1913.

Folium crocodili Rumph. was originally reduced by Linnaeus to Hedysarum umbellatum Linn., in Stickman Herb. Amb. (1754) 17, Amoen. Acad. 4 (1759) 127, Syst. ed. 10 (1759) 1170, Sp. Pl. ed. 2 (1763) 1053, which, as Desmodium umbellatum (Linn.) DC., is certainly the correct dispositon of it. Miquel, Fl. Ind. Bat. 1 (1855) 263, erroneously placed it under Dendrolobium cephalotes Benth. The two forms described by Rumphius as latifolium and parvifolium are manifestly referable to the same species.

DESMODIUM TRIQUETRUM (Linn.) DC. Prodr. 2 (1825) 326.

Hedysarum triquetrum Linn. Sp. Pl. (1753) 746. Pteroloma triquetrum Benth. in Miq. Pl. Jungh. (1852) 220. Meibomia triquetra O. Kuntze Rev. Gen. Pl. 1 (1891) 197. Phaseolus montanus VI, VII Rumph. Herb. Amb. 6: 146.

AMBOINA, Soja road, Robinson Pl. Rumph. Amb. 557, August 1, 1913, on hillsides, altitude 200 to 300 meters.

The reduction of *Phaseolus montanus VI* to *Hedysarum triquetrum* Linn. was first made by Loureiro, Fl. Cochinch. (1790) 448, which, as *Desmodium triquetrum* (Linn.) DC., is certainly the correct disposition of it. *Phaseolus montanus VII* was first

^{*} At the time of publication of this the continuation of Gagnepain's paper in Not. Syst. 3, no. 9, has not reached me, so I am not certain that Desmodium zonatum Miq. is the name selected by him for Desmodium ormocarpoides auct., non DC.

reduced here by Linnaeus, Sp. Pl. ed. 2 (1763) 1052, which is probably the correct dispositon of it, although not certain.

DESMODIUM GANGETICUM (Linn.) DC. Prodr. 2 (1825) 327.

Hedysarum gangeticum Linn. Sp. Pl. (1753) 746.

Meibomia gangetica O. Kuntze Rev. Gen. Pl. 1 (1891) 196.

Crotalaria montana V Rumph. Herb. Amb. 6: 146? (haud t. 66 quae est Desmodium ormocarpoides DC. et D. zonatum Miq.).

Amboina, Batoe gadjah, Robinson Pl. Rumph. Amb. 558, August 5, 1913, on grassy hillsides, altitude about 150 meters. Also represented by Rel. Robins. 2537 from Bali Island, July 7, 1913.

The reduction of *Crotalaria montana V* to *Desmodium gangeticum* (Linn.) DC. is rather unsatisfactory, but follows Burman f., Loureiro, Poiret, de Candolle, and other authors. All, however, apparently based their conception of the Rumphian plant chiefly if not wholly upon the figure indicated by Rumphius as *Phaseolus montanus*. None of the eight forms actually described by Rumphius under the heading *Phaseolus montanus* agrees with the figure, which unmistakably is *Desmodium ormocarpoides* DC.; see page 267. The Rumphian description of *Crotalaria montana V* applies to *Desmodium gangeticum* DC. sufficiently closely except in the description of the leaves as "semi digitum longa, ac pennam lata."

Phaseolus montanus VIII Rumph., Herb. Amb. 6:146, is indeterminable from any data at present available. It was from Macassar, Celebes, where it was known as *tsjeme tsjeme*. Hasskarl, Neue Schlüssel (1866) 176, suggests that it may be a species of *Sophora* near *S. glabra* Hassk.

PSEUDARTHRIA Wight and Arnott

PSEUDARTHRIA VISCIDA (Linn.) W. & A. Prodr. (1834) 209.

Hedysarum viscidum Linn. Sp. Pl. (1753) 747.

Desmodium viscidum DC. Prodr. 2 (1825) 336.

Desmodium timoriense DC. l. c. 327.

Phaseolus adhaerens Rumph. Herb. Amb. 6: 150.

AMBOINA, Amahoesoe, Robinson Pl. Rumph. Amb. 554, August 30, 1913, at low altitudes, locally known as bunga pasang pasang. Also represented by Rel. Robins. 2499 from Boeton, and Rel. Robins. 2536 from Bali, July, 1913.

The identification of *Phaseolus adhaerens* Rumph. with *Pseudarthria viscida* W. & A. is not certain. The Rumphian plant may be a *Desmodium* rather than a *Pseudarthria*. Hasskarl, Neue Schlüssel (1866) 177, considers that it is *Desmodium stipulaceum* DC. var. aparine (Hassk.) Miq. Fl. Ind. Bat. 1¹ (1855) 252.

DALBERGIA * Linnaeus f.

DALBERGIA PARVIFLORA Roxb. Hort. Beng. (1814) 98, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 225.

Dalbergia zollingeriana Miq. Fl. Ind. Bat. 1¹ (1855) 130. Lacca lignum Rumph. Herb. Amb. 5:17, t. 13.

This species is not represented in our Amboina collections. The reduction of *Lacca lignum* to *Dalbergia parviflora* Roxb. is certainly correct and was first suggested, as *D. zollingeriana* Miq., by Teysmann in a letter to Hasskarl, cited by Hasskarl, Neue Schlüssel (1866) 90.†

This species of *Dalbergia* extends from Indo-China and the Malay Peninsula to Sumatra, Borneo, Java, Celebes, Halmaheira, and Amboina.

The forms briefly described by Rumphius as Lacca lignum ruffum, Herb. Amb. 5:18, L. lignum femina, l. c. 20, and L. lignum e Java, l. c. 20, are indeterminable from data now available and may be referable to *Dalbergia* or to other genera of the *Leguminosae*, or they may even belong in other families.

PTEROCARPUS Linnaeus

PTEROCARPUS INDICUS Willd. Sp. Pl. 3 3 (1800) 904 (type!).

Lingoum rubrum Rumph. Herb. Amb. 2: 205, t. 70.

Amboina, Hoenoet, Robinson Pl. Rumph. Amb. 550, October 18, 1913, in remnants of forests, altitude 200 meters, locally known as kayu lingua.

This was originally reduced by Linnaeus merely to the genus *Pterocarpus*, in Stickman Herb. Amb. (1754) 10, but in his Species Plantarum, ed. 2 (1763) 1662, he erroneously placed it as a synonym of *Pterocarpus draco* Linn. It is the entire basis of *Pterocarpus indicus* Willd., which species must be interpreted wholly from the Rumphian figure and description. The species is widely distributed in the Malayan region and very generally has been correctly interpreted by modern botanists, as Rumphius's figure of the plant is an excellent one.

Probably referable here are the forms described by Rumphius, l. c. 206, 209, 210, as Lingoum II album and III rubrum.

PTEROCARPUS PAPUANUS F. Muell. in Austral. Journ. Pharm. 1 (1886) 123; Bot. Centralbl. 27 (1886) 21?

Lingoum saxatile Rumph. Herb. Amb. 2: 210.

Lingoum saxatile Rumph., apparently a Pterocarpus, should

^{*} Retained name, Vienna Code; Amerimnon P. Br. (1756) is older.

[†] See Prain, D., in Ann. Bot. Gard. Calcutta 10¹ (1904) 34, t. 8, who cites specimens from Amboina and who also cites Lacca lignum Rumph. as a synonym of Dalbergia parviflora Roxb.

be a very characteristic species, judging from the description of the fruits, which are stated to be twice as large as those of Pterocarpus indicus Willd., "quatuor vel quinque digitos transversales lati." Hasskarl, Neue Schlüssel (1866) 41, has suggested that it may be *Pterocarpus obtusatus* Mig., which after all may be the correct disposition of it. Miquel's description is so very imperfect that no definite conception of his species can be gained from the description alone. I suggest that it may be F. Mueller's species, which is supposed to have large fruits. Pterocarpus blancoi Merr. should also be very closely allied. Dr. Alfred J. Ewart has kindly sent me a leaflet from the type of Pterocarpus papuanus F.-Muell., which is preserved in the national herbarium The leaflet very closely resembles those of at Melbourne. Pterocarpus indicus Willd. Doctor Ewart states that there are no fruits with the specimen, and the size of the fruits is not indicated by Mueller in the original description of the species.

PTEROCARPUS SANTALINUS Linn. f. Suppl. (1881) 318.

Sandalum rubrum Rumph. Herb. Amb. 2: 47.

This is undoubtedly the correct disposition of Sandalum rubrum, as suggested by Hasskarl, Neue Schlüssel (1866) 47. It was not from Amboina.

PONGAMIA * Ventenat

PONGAMIA PINNATA (Linn.) comb. nov.

Cytisus pinnatus Linn. Sp. Pl. (1753) 741.

Robinia mitis Linn. Sp. Pl. ed. 2 (1763) 1044.

Galedupa indica Lam. Encycl. 2 (1786) 594, excl. syn. Caju galedupa Rumph.

Dalbergia arborea Willd. Sp. Pl. 3 (1803) 901.

Pongamia glabra Vent. Jard. Malm. 1 (1803) 28, t. 28.

Galedupa pinnata Taub. in Engl. & Prantl Nat. Pflanzenfam. 3 3 (1891) 344.

Caju pinnatum O. Kuntze Rev. Gen. Pl. 1 (1891) 167.

Pongamia mitis Merr. in Philip. Journ. Sci. 5 (1910) Bot. 101.

Malaparius Rumph. Herb. Amb. 3: 183, t. 117.

Malaparius e Nussanive Rumph. Herb. Amb. 5: 184.

AMBOINA, Eri and Amahoesoe, Robinson Pl. Rumph. Amb. 243, August and September, 1913, along the seashore, with normal fruits and with galls (Malaparius e Nussanive Rumph.!).

Desrouss, in Lamarck Encycl. 3 (1791) 689, thought that *Mala-* parius might be near *Pterocarpus*; and Loureiro, Fl. Cochinch. (1790) 431, erroneously cites it under his *Pterocarpus* flavus, a species of doubtful status, this reduction being followed, how-

^{*} Retained name, Vienna Code; Galedupa Lam. (1786) is older.

ever, by Poiret, de Candolle, Don, Dietrich, Miquel, and a few other authors. Malaparius, however, is no Pterocarpus, but is manifestly identical with the plant commonly called *Pongamia* glabra Vent. The Rumphian figure is an excellent one, and the description applies perfectly except as to the statement that the flowers are yellow; this may have been due to a mixture of material, or Rumphius may have had old flowers. The flowers are usually white or pink, turning somewhat yellowish in age. Prain, Journ. As. Soc. Beng. 66² (1897) 95, seems to have been the first author correctly to reduce Malaparius to Pongamia. Malaparius flavus Miq., Fl. Ind. Bat. 1 (1858) 1082, based on Sumatran specimens, the generic name from Rumphius, is apparently the form of *Pongamia pinnata* (Linn.) Merr. described by Hasskarl as Pongamia xerocarpa (P. glabra Vent. var. xerocarpa Prain).

I have taken up the earliest Linnean specific name for this widely distributed species, as I am now convinced that the specimen in the Linnean herbarium, which is the common *Pongamia glabra* Vent., is the actual type of *Cytisus pinnatus* Linn., as indicated by the fact that Linnaeus not only gives a bibliographical reference to Plukenet, but also adds a short description manifestly taken from an actual specimen.

DERRIS * Loureiro

DERRIS TRIFOLIATA Lour. Fl. Cochinch. (1790) 433.

Robinia uliginosa Roxb. ex Willd. Sp. Pl. 3 (1800) 1133.

Dalbergia heterophylla Willd. l. c. 901.

Pongamia uliginosa DC. Prodr. 2 (1825) 416.

Derris forsteniana Blume ex Miq. Fl. Ind. Bat. 11 (1855) 144, t. 3.

Tuba siliquosa Rumph. Herb. Amb. 5: 41, t. 25, f. 2.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 537, October 25, 1913, along tidal streams, locally known as daun talahohor.

Rumphius's figure is an excellent one of the widely distributed form commonly known as *Derris uliginosa* Roxb., but for which I maintain the earlier name, *Derris trifoliata* Lour. Loureiro's type is not extant, at least no specimen of his species is among his plants in the herbarium of the British Museum. *Dalbergia heterophylla* Willd. is exactly the same as *Derris uliginosa* Roxb. and has priority over Roxburgh's name in case *Derris trifoliata* Lour. be abandoned. Hasskarl, Neue Schlüssel (1866) 93, reduced *Tuba siliquosa* Rumph. to *Derris forsteniana* Blume, which is a synonym of the above species.

^{*} Retained name, Vienna Code; Salken Adans. and Solori Adans. (1763), Deguelia Aubl. (1775), and Cylizoma Neck. (1790) are older.

DERRIS HEPTAPHYLLA (Linn.) comb. nov.

Sophora heptaphylla Linn. Sp. Pl. (1753) 373, excl. syn. Plukenet. Pongamia sinuata Wall. Cat. (1832) no. 5911, nomen nudum. Derris sinuata Benth. ex Thw. Enum. Pl. Zeyl. (1859-64) 93. Pterocarpus diadelphus Blanco Fl. Filip. (1837) 563. Derris diadelpha Merr. in Philip. Journ. Sci. 5 (1910) Bot. 103. Funis convolutus Rumph. Herb. Amb. 5: 69, t. 37, f. 1.

This species is not represented in our Amboina collections, but unquestionably *Funis convolutus* Rumph. is identical with the widely distributed Indo-Malayan form commonly known as *Derris sinuata* Benth. Hasskarl, Neue Schlüssel (1866) 96, after Miquel, has suggested that it may be the same as *Derris montana* Benth., which is hardly possible in view of the characters and geographic distribution of that species. The type of *Sophora heptaphylla* Linn. is *Fl. Zeyl. 104*, and Hermann's specimen on which *Fl. Zeyl. 104* was based is *Derris sinuata* Benth. The reference to Plukenet, included by Linnaeus in the original description as a doubtful synonym, cannot possibly be interpreted as the type.

DERRIS ELLIPTICA (Roxb.) Benth. in Journ. Linn. Soc. Bot. 4 (1860) Suppl. 111.

Galedupa elliptica Roxb. Hort. Beng. (1814) 53, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 242.

Tuba radicum alba Rumph. Herb. Amb. 5: 37, t. 23.

This is not represented in our Amboina collections. The figure is unmistakably that of a species of *Derris*, either identical with, or very closely allied to, *Derris elliptica* Benth. The indicated use of the plant, for poisoning fish, is also a *Derris* character, several of the Malayan species being thus used, including *Derris elliptica* Benth. Hasskarl, Neue Schlüssel (1866) 92, considers the Rumphian figure and description to be referable to *Millettia sericea* W. & A., but this reduction is certainly incorrect.

Perhaps referable to the same species of *Derris* as the above is Tuba radicum nigra Rumph. Herb. Amb. 5:38. It is used for the same purposes as *Tuba radicum alba*, and is at least a species of *Derris*. Hasskarl, Neue Schlüssel (1866) 92, merely indicated that it belongs in the *Dalbergiae*.

INOCARPUS Forster

INOCARPUS EDULIS Forst. Char. Gen. (1776) 66, t. 33.

Bocoa edulis Baill. Adansonia 9 (1868-70) 237. Gajanus edulis O. Kuntze Rev. Gen. Pl. 1 (1891) 189. Gajanus Rumph. Herb. Amb. 1: 170 t. 65.

Amboina, Hitoe lama, Robinson Pl. Rumph. Amb. 540, November, 1913, 144971——18

in light forests, altitude 50 meters; Amboina town, Robinson Pl. Rumph. Amb. 541, October 25, 1913, from cultivated trees, locally known as guyang and dawn gayang.

This reduction of *Gajanus* seems first to have been suggested by Lamarck, Encycl. 3 (1789) 253, which has been accepted by all succeeding authors and is the correct disposition of it.

ABRUS Linnaeus

ABRUS PRECATORIUS Linn. Syst. ed. 12 (1767) 472.

Glycine abrus Linn. Sp. Pl. (1753) 753.

Abrus frutex Rumph. Herb. Amb. 5: 57, t. 32.

Amboina, Binting, Robinson Pl. Rumph. Amb. 527, September, 1913, locally known as saga, saga alus, and daun saga.

This species is too well known to need discussion. The original reduction of *Abrus frutex* to *Glycine abrus* Linn.=*Abrus precatorius* Linn. was made by Linnaeus, in Stickman Herb. Amb. (1754) 19, Amoen. Acad. 4 (1759) 128, Syst. ed. 10 (1759) 1173, Sp. Pl. ed. 2 (1763) 1025.

CLITORIA Linnaeus

CLITORIA TERNATEA Linn. Sp. Pl. (1753) 753.

Flos coeruleus Rumph. Herb. Amb. 5: 56, t. 31.

AMBOINA, Gelala, Robinson Pl. Rumph. Amb. 543, August 25, 1913, along roadsides at low altitudes, locally known as bunga sayor and sayor katjang.

This species is too well known to need discussion. Flos coeruleus was first reduced to Clitoria ternatea by Linnaeus, in Stickman Herb. Amb. (1754) 19, and has been consistently cited here by all succeeding authors.

GLYCINE Linnaeus

GLYCINE MAX (Linn.) comb nov.

Phaseolus max Linn. Sp. Pl. (1753) 725.

Dolichos soja Linn. Sp. Pl. (1753) 727.

Soja hispida Moench. Meth. (1794) 153.

Glycine hispida Maxim. in Bull. Acad. Pétersb. 18 (1873) 398.

Glycine soja S. & Z. in Abh. Akad. Muench. 4² (1843) 119.

Glycine ussuriensis Regel & Maack Tent. Fl. Ussur. (1861) 50.

Soja max Piper in Journ. Am. Soc. Agron. 6 (1914) 84.

Cadelium Rumph. Herb. Amb. 5: 388, t. 140.

This species is not represented in our Amboina collections, but the Rumphian figure is an excellent representation of the widely cultivated and well-known soy bean. It was originally reduced by Linnaeus to *Phaseolus max*, in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1162, Sp. Pl. ed. 2 (1763) 1018, in which he was followed by Burman f., Willdenow, Persoon, Poiret, Don, and other authors. Loureiro, Fl. Cochinch. (1790) 441, correctly referred it to *Dolichos soja* Linn., which is a synonym of *Phaseolus max* Linn.=*Glycine max* (Linn.) Merr. By Henschel and by Pritzel it has been also correctly referred to *Soja hispida* Moench., another synonym of *Glycine max* Merr. Miquel, Fl. Ind. Bat. 1¹ (1855) 197, erroneously referred it to *Phaseolus radiatus* Linn.

Phaseolus max Linn. has been considered a true Phaseolus and a synonym of P. radiatus Linn. by nearly all recent authors. It is clearly the soy bean, identical with Glycine hispida Maxim., and the specific name max should be maintained for the soy bean, whether Glycine or Soja be recognized as its generic name. Piper has declared in favor of the genus Soja, chiefly for the reason that of the eight species originally described by Linnaeus in Glycine, but a single one, G. javanica Linn., now remains in the genus, the other seven having been removed by subsequent authors to Apios, Kraunhia, Abrus, Rhynchosia, Amphicarpaea, and Fagelia, respectively. However, I am content to determine the type of the genus Glycine by elimination, which well maintain Glycine in its generally accepted sense with G. javanica Linn. as its type.

Prof. C. V. Piper has cleared up the synonymy of this commonly cultivated species; and with the aid of extensive data, supplied by Sir David Prain, he has clearly shown that *Phaseolus max* Linn. is identical with the commonly cultivated and well-known soy bean.*

ERYTHRINA Linnaeus

ERYTHRINA FUSCA Lour. Fl. Cochinch. (1790) 427.

Erythrina ovalifolia Roxb. Hort. Beng. (1814) 53, Fl. Ind. ed. 2, 3 (1832) 254.

Gelala aquatica Rumph. Herb. Amb. 2: 235, t. 78.

This characteristic species is not represented in our Amboina collections. The reduction of *Gelala aquatica* was made by Loureiro, Fl. Cochinch. (1790) 427, in the original description of the species. *Erythrina ovalifolia* Roxb., the name commonly employed in current botanical literature, is certainly a synonym.

^{*} For a very full discussion of the case see Piper, C. V. The name of the soy bean; a chapter in its botanical history. *Journ. Am. Soc. Agron.* 6 (1914) 75-84.

ERYTHRINA VARIEGATA Linn. in Stickman Herb. Amb. (1754) 10, Amoen. Acad. 4 (1759) 122 (type!).

Erythrina picta Linn. Sp. Pl. ed. 2 (1763) 993. Gelala alba Rumph. Herb. Amb. 2: 234, t. 77.

This species is not represented in our Amboina collections. The form so excellently figured by Rumphius occurs in the Philippines, in Palawan and in Mindanao, and on Corregidor Island in cultivation and is in all respects, except in its variegated leaves. the same as the common and widely distributed plant commonly known as Erythrina indica Lam. The Rumphian figure and description are the whole basis of Erythrina variegata Linn. and in part the basis of E. picta Linn. Strictly, the specific name variegata should be adopted to include not only the form with the variegated leaves, but also the much commoner and widely distributed form with uniformly green leaves, E. The differences between the two are no greater, indica Lam. for the purpose of distinguishing species or varieties, than between the various color forms of Graptophyllum pictum (Linn.) Griff. or of Codiaeum variegatum (Lour.) Blume.

Var. ORIENTALIS (Linn.) comb. nov.

Erythrina corallodendron Linn. var. orientalis Linn. Sp. Pl. (1753) 706.

Tetradapa javanorum Osbeck Dagbok Ostind. Resa (1757) 93.

Erythrina indica Lam. Encycl. 2 (1785) 391.

Erythrina orientalis Murr. Comm. Gotting. 8 (1787) 35, t. 1.

Erythrina lithosperma Blume Cat. Gew. Buitenz. (1823) 92.

Gelala litorea Rumph. Herb. Amb. 2: 230, t. 76.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 533, August 8, 1913, along the seashore, locally known as daun gelala.

Gelala litorea Rumph. was originally reduced by Linnaeus to Erythrina corallodendron Linn., in Stickman Herb. Amb. (1754) 10, Amoen. Acad. 4 (1759) 122, Syst. ed. 10 (1759) 1155; and in the second edition of the Species Plantarum, (1763) 993, it was definitely reduced to the var. orientalis Linn. Erythrina corallodendron Linn. is a mixture of an American species and what is now generally known as Erythrina indica Lam., here called Erythrina variegata Linn. var. orientalis (Linn.) Merr. Erythrina corallodendron Linn. is apparently typified by the American plant. Tetradapa javanorum Osbeck, which does not appear in Index Kewensis, is manifestly the same as Erythrina indica Lam., the type being from western Java. It is suspected that the forms from Java and China, briefly mentioned by Rumphius, are referable here, but the data given are too indefinite for their certain determination.

MUCUNA * Adanson

MUCUNA GIGANTEA (Willd.) DC. Prodr. 2 (1825) 405.

Dolichos giganteus Willd. Sp. Pl. 3 (1800) 1041.

Carpopogon giganteum Roxb. Hort. Beng. (1814) 54.

Zoopthalmum giganteum Prain in Journ. As. Soc. Beng. 66 2 (1897) 68.

Lobus litoralis Rumph. Herb. Amb. 5: 10, t. 6.

Amboina, Waë, Robinson Pl. Rumph. Amb. 567, November 26, 1913, along the seashore, locally known as bharu laut.

This was erroneously reduced by Loureiro, Fl. Cochinch. (1790) 456, to Citta nigricans Lour.=Mucuna nigricans (Lour.) Steud. Loureiro's species was described from Cochin-China material, and is entirely different from the plant that Rumphius described and figured, belonging in the section Citta, the pods with prominent oblique plaits across their faces. Most authors who have had occasion to cite the Rumphian figure have followed Loureiro's erroneous reduction. The forms indicated by Rumphius, l. c., as nigra and maculata are probably merely variants of this widely distributed species.

MUCUNA PRURIENS (Linn.) DC. Prodr. 2 (1825) 405.

Dolichos pruriens Linn. in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1162 (type!).

Stizolobium pruriens Medic. in Vorles. Churpf. Phys. Ges. 2 (1797) 399.

Carpopogon pruriens Roxb. Hort. Beng. (1814) 54. Negretia pruriens Blanco Fl. Filip. ed. 2 (1845) 411. Cacara pruritus Rumph. Herb. Amb. 5: 393, t. 142.

This species is not represented in our Amboina collections, but I have before me a single pod of the species originating in Amboina, received from the botanic garden, Buitenzorg, Java, through Prof. C. V. Piper, of the United States Department of Agriculture; it is apparently identical with the widely distributed, low-altitude, Philippine form, but is not the same as much of the material in various herbaria labelled Mucuna pruriens DC. The Rumphian figure and description are the whole basis of Dolichos pruriens Linn., and the species must accordingly be interpreted from it. In the second edition of his Species Plantarum (1763) 1019. Linnaeus added certain references, to Jacquin, to Sloane, and perhaps the one to Rheede, that represent a species quite different from the Philippine and Moluccan Mucuna pruriens (Linn.) DC., and from these references the species has, by most authors, been erroneously interpreted.

^{*} Retained name, Vienna Code; Zoopthamnum P. Br. and Stizolobium P. Br. (1756) are older.

MUCUNA MINIATA sp. nov. § Citta (?).

Parrana miniata Rumph. Herb. Amb. 5: 10.

Amboina, Paso and Roemah tiga, Robinson Pl. Rumph. Amb. 566 (type), in thickets and forests at low altitudes, locally known as tali or tali-tali.

Frutex scandens usque ad 15 m altus, inflorescentiis exceptis glaber; foliolis firme chartaceis, in siccitate nigricantibus, nitidis, oblongis ad oblongo-ovatis, usque ad 14 cm longis, prominente subcaudato-acuminatis, lateralibus obliquis, basi rotundatis vel obscurissime subcordatis, nervis utrinque circiter 4; inflorescentiis circiter 20 cm longis, minute adpresse cinereopubescentibus atque pilis paucis urentibus instructis, fasciculatis, caulifloris; floribus miniatis, 6 ad 7 cm longis, calycis dentibus prominentibus, inferioribus angustis, 5 ad 7 mm longis.

A scandent shrub attaining a height of 15 m, glabrous except the inflorescence, deciduous. Branches slender, smooth, terete. Petioles 6 to 8 cm long. Leaflets firmly chartaceous, blackish when dry, shining, 10 to 14 cm long, 5 to 6 cm wide, oblong-ovate to oblong, the terminal one equilateral, lateral ones more or less oblique, apex rather prominently subcaudate-acuminate, acumen 1 to 1.5 cm long, blunt, base rounded or shallowly and obscurely cordate; lateral nerves about 4 on each side of the midrib, prominent, curved-ascending, obscurely anastomosing, the rachis extended about 2.5 cm beyond the insertion of the lateral leaflets. the petiolules black, 4 to 5 mm long. Plant leafless at time of flowering, the racemes up to 20 cm in length, fascicled on nodules along the trunk or larger branches, appressed cinereous-pubescent with short hairs, with a few, longer, yellowish-brown, stiff, stinging hairs intermixed, the indumentum more prominent on the calvx and pedicels than on the rachis. Flowers vermilion. 6 to 7 cm long, somewhat curved, their pedicels mostly in pairs, slender, about 2 cm long, spreading. Calyx cup-shaped, the tube about 8 mm long, the teeth rather prominent, the upper one stouter than the others, 3 to 4 mm long, the two lateral ones slenderly acuminate, about 3 mm long, the lower one linear, 5 to 7 mm in length. Standard 3.5 cm long, about 2 cm wide, blunt; wings rather strongly falcate, acuminate, up to 6 cm long, about 12 mm wide. Keel slightly longer than the wings, somewhat rostrate, outer margins ciliate in the lower part. Ovary and style hirsute. Fruit unknown.

This species is well characterized by its glabrous leaves, rather large, crimson flowers, and prominent, slender calyx teeth. It belongs with a group of species found in New Guinea, including Mucuna novo-guineënsis Scheff., M. bennettii F. Muell., and M. kraetkei Warb. Scheffer's species has bright orange flowers,

but the other two have red flowers. Warburg's species is distinguished by having short calyx teeth. Mueller's species differs from the Amboina form in its distinctly larger flowers and very much longer calyx teeth. I am under obligations to Prof. A. J. Ewart, curator of the national herbarium at Melbourne, for a flower of d'Albertis's specimen, the type of Mucuna bennettii F. Muell., for purposes of comparison, as well as for a copy of Mueller's original description of the species.

MUCUNA ATERRIMA (Piper & Tracy) comb. nov.

Stizolobium aterrimum Piper & Tracy in U. S. Dept. Agr. Bur. Pl. Ind. Bull. 179 (1910) 18, t. 4, f. B, t. 7.
Cacara nigra Rumph. Herb. Amb. 5: 381, t. 138.
Cacara pilosa Rumph. Herb. Amb. 5: 392.

This species is not represented in our Amboina collections. However, Cacara nigra is manifestly a Mucuna and is certainly synonymous with the form recently described by Piper and Tracy as Stizolobium aterrimum, as indicated by the Rumphian description, rather poor figure, and especially the data as to the pods "ad ventrum tribus protuberantibus costis notati," and the seeds "primo rubentia, dein fusca, ac tandem nigerrima, glabra & splendentia." Stizolobium aterrimum was described from cultivated specimens originating in Brazil, Australia, Cochin-China, Barbadoes, Mauritius, Java, and Ceylon. Linnaeus erroneously reduced Cacara nigra to Phaseolus unquiculatus Linn., in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1162, and to Dolichos unquiculatus Linn., in Sp. Pl. ed. 2 (1763) 1019, with which species it has nothing in common. He was followed by Burman f., Lamarck, Loureiro, Willdenow, Persoon, Henschel, Pritzel, and Miquel. By other authors, Wight and Arnott, Prodr. (1834) 255, it was reduced, with doubt, to Mucuna capitata DC., which it certainly is not; while Miquel, Fl. Ind. Bat. 1 1 (1855) 228, thought that it might be referable to Dolichos dasycarpus Mig.=Dysolobium dolichoides (Roxb.) Prain. Piper Tracy,* discuss Cacara nigra under Stizolobium capitatum (Roxb.) O. Kuntze=Mucuna capitata DC., but on account of the unsatisfactory figure given by Rumphius failed to recognize it as their Stizolobium aterrimum, while excluding it as a synonym of S. capitatum O. Ktze. In spite of the poor figure the description of the fruit and flower characters applies very closely in all particulars to Mucuna aterrima (Piper & Tracy) Merr.

^{*} The Florida velvet bean and related plants. U. S. Dept. Agr. Bur. Pl. Ind. Bull. 179 (1910) 13.

From the rather full data given by Rumphius I am unable to distinguish from this species the form described by Rumphius as Cacara pilosa. He contrasts it with Cacara nigra, but apparently considered it distinct from the latter chiefly because it was a wild, not a cultivated plant. Henschel, Vita Rumph. (1833) 181, erroneously cites the name Cacara pilosa as a synonym of Phaseolus pilosus Klein and erroneously cites t. 142 (=Mucuna pruriens DC.) as representing Cacara pilosa. noted by Hasskarl, Neue Schlüssel (1866) 136, it is close to Mucuna utilis Wall., but that species has the pods covered with a tawny pubescence. It differs from Mucuna velutina Hassk. in its purple, not white flowers. The chief objection to the identification of Cacara pilosa Rumph, with Cacara nigra Rumph. =Mucuna aterrima (Piper & Tracy) Merr. is that Rumphius describes the former as having more pubescent leaves than the latter.

DIOCLEA Humbolt, Bonpland, and Kunth

DIOCLEA REFLEXA Hook. f. Niger Flora (1849) 306.

Parrana rubra Rumph, Herb. Amb. 5: 9, t. 5.

AMBOINA, Toelehoe, Paso, and Amboina, in thickets at low altitudes and along the beach, Robinson Pl. Rumph. Amb. 397, November, 1913.

Parrana rubra Rumph., one of the "sea beans," is fairly well described but very poorly figured by Rumphius. It has remained doubtful up to the present time, but I feel confident that it is the widely distributed Dioclea reflexa Hook. f. in spite of the poor figure. Miquel thought that the figure represented a species of Mucuna, and Teysmann thought it was a species of Derris. The description of the seeds applies closely to those of Dioclea reflexa, but the figure does not show their peculiar hilum character.

CANAVALIA* de Candolle

CANAVALIA MICROCARPA (DC.) comb. nov.

Lablab microcarpus DC. Prodr. 2 (1825) 402 (type!). Canavalia turgida Grah. in Wall. Cat. (1832) no. 5534. Cacara litorea Rumph. Herb. Amb. 5: 390, t. 141, f. 1.

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 562, October 29, 1913, in fruit, climbing in thickets back of the beach; town of Amboina, Robinson Pl. Rumph. Amb. 561, October 26, 1913, in flower, in thickets along streams, locally known as katjang hor.

Linnaeus, in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 132, reduced *Cacara litorea*, with doubt, to *Dolichos*

^{*} Retained name, Brussels Congress; Canavali Adans. (1763) and Clementea Cav. (1804) are older.

lablab Linn., with which species it has nothing in common. Lablab microcarpus DC. apparently supplies the oldest valid specific name for the species, which is here accepted, although unfortunately not an appropriate specific name, as the fruits are by no means "small" in this species.

The synonymy of the species is rather complicated, and has been discussed by Prain,* who concludes that the name Canavalia obtusifolia DC. is properly applicable to this form with the wide pods and prominent keels or ridges. Canavalia obtusifolia DC. was based on Dolichos obtusifolius Lam., an American plant. Dolichos rotundifolius Vahl was also described from American specimens, and I believe that this name, as well as Canavalia obtusifolia (Lam.) DC., is a synonym of Canavalia lineata (Thunb.) DC. Katu-tjandi Rheede, Hort. Malabar. 8: 83, t. 43, included pods of both Canavalia lineata DC. and C. turgida Grah.=Canavalia microcarpa (DC.) Merr. Hasskarl, Neue Schlüssel (1866) 136, leaves Cacara litorea as a synonym of Lablab vulgaris Savi, which is an entirely wrong disposition of it. The Rumphian figure is very greatly reduced, whence de Candolle's inappropriate specific name.

CANAVALIA LINEATA (Thunb.) DC. Prodr. 2 (1825) 404.

Dolichos lineatus Thunb. Fl. Jap. (1784) 280.

Dolichos obtusifolius Lam. Encycl. 2 (1786) 295.

Dolichos rotundifolius Vahl Symb. 2 (1791) 81. Canavalia obtusifolia DC. Prodr. 2 (1825) 404.

Cacara litorea Rumph. Herb. Amb. 5: 390 quoad descr. p. p., non t. 141, t. 1. [See Canavalia microcarpa (DC.) Merr.].

Amboina, Hatiwe, Robinson Pl. Rumph. Amb. 553, September 4, 1913, along the strand.

This strand form, apparently always growing on the loose sand of the beach, is not to be confused with *Canavalia micro-carpa* (DC.) Merr. (*C. turgida* Grah.), which grows in thickets back of the beach. It is apparently included in the description of *Cacara litorea* Rumph., but is not the form figured by him; see *Canavalia microcarpa* (DC.) Merr., page 280.

CANAVALIA GLADIATA (Jacq.) DC. Prodr. 2 (1825) 404.

Dolichos gladiatus Jacq. Coll. 2 (1788) 276.

Canavalia gladiata DC. var. machaeroides DC. Prodr. 2 (1825) 404 (type!).

Canavalia machaeroides DC. ex Steud. Nomencl. ed. 2, 1 (1840) 273 (type!).

Lobus machaeroides Rumph. Herb. Amb. 5: 376, t. 135, f. 1.

This cultivated bean is not represented in our Amboina col-

^{*} Journ. As. Soc. Beng. 66 2 (1897) 419.

lections. The figure and description manifestly apply to the form generally known as Canavalia gladiata DC., which is found in scattered cultivation in most tropical countries. Linnaeus originally, but erroneously, reduced Lobus machaeroides to Dolichos ensiformis Linn.—Canavalia ensiformis DC., in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1162, Sp. Pl. ed. 2 (1763) 1022, in which he was followed by Burman f., Lamarck, and Loureiro. Willdenow, Sp. Pl. 3 (1800) 1039, referred it to Dolichos gladiatus, which as Canavalia gladiata (Jacq.) DC. is the correct disposition of it. Canavalia machaeroides DC. (C. gladiata DC. var. machaeroides DC.) is based wholly on Rumphius and thus becomes a synonym of Canavalia gladiata (Jacq.) DC., although placed in Index Kewensis as a synonym of Canavalia cathartica Thouars.

PUERARIA de Candolle

PUERARIA PHASEOLOIDES (Roxb.) Benth. in Journ. Linn. Soc. Bot. 9 (1867) 125.

Dolichos phaseoloides Roxb. Fl. Ind. ed. 2, 3 (1832) 316. Phaseolus minimus silvestris Rumph. Herb. Amb. 5: 387?

AMBOINA, Soja road, Batoe gadjah, and Amboina (town), Robinson Pl. Rumph. Amb. 607, July and August, 1913, in thickets and waste places, sea level to an altitude of 200 meters, locally known as katjang panjang.

The species briefly described by Rumphius is referred here with some doubt, although the description applies closely to *Pueraria phaseoloides* Benth. Hasskarl, Neue Schlüssel (1866) 136, thought that it might be *Glycine mollis* W. & A. *Phaseolus minimus* Rumph., described in the same chapter and figured, is *Phaseolus aureus* Roxb.

CAJANUS * de Candolle

CAJANUS CAJAN (Linn.) Millsp. in Field. Columb. Mus. Bot. 2 (1900) 53.

Cytisus cajan Linn. Sp. Pl. (1753) 739.

Cytisus pseudo-cajan Jacq. Hort. Vind. 2 (1772) 54, t. 119.

Cajan inodorum Medic. in Vorles. Churpf. Phys. Ges. 2 (1787) 363.

Cajanus bicolor DC. Cat. Hort. Monsp. (1813) 85.

Cajanus indicus Spreng. Syst. 3 (1826) 248.

Phaseolus balicus Rumph. Herb. Amb. 5:377, t. 135, f. 2.

Amboina, Koesoe koesoe sereh, Robinson Pl. Rumph. Amb. 551, August 23, 1913, locally known as kajan kay.

Phaseolus balicus was originally reduced by Linnaeus to his Cytisus cajan, in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 132, to which it certainly belongs. The oldest valid

^{*} Retained name, Brussels Congress; Cajan Adans. (1763) is older.

specific name is that supplied by the Linnean binomial, which is here accepted in place of the almost universally used *Cajanus indicus* Spreng.

PHASEOLUS Linnaeus

PHASEOLUS VULGARIS Linn. Sp. Pl. (1753) 723.

Phaseolus scriptus Rumph. Herb. Amb. 5: 382? Faba rubra Rumph. Herb. Amb. 5: 382?

Both of the above plants, very briefly described by Rumphius, were exotics, which had been introduced into Amboina and cultivated. Both of them may possibly be forms of *Phaseolus vulgaris* Linn., but this disposition of them is a mere guess.

PHASEOLUS AUREUS Roxb. Hort. Beng. (1814) 55, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 297.

Phaseolus mungo auctt., non Linn.

Phaseolus radiatus auctt., non Linn.

Phaseolus minimus Rumph. Herb, Amb. 5: 386, t. 139, f. 2.

The commonly cultivated and well-known mung bean is not represented in our Amboina collections. Linnaeus originally reduced *Phaseolus minimus* Rumph. to *P. radiatus* Linn., in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1162, in which he has been followed by all authors who have had occasion to cite the Rumphian figure and description. However, *Phaseolus radiatus* Linn. is not the mung bean, but is the form described by Roxburgh as *Phaseolus sub-lobatus* Roxb. *Phaseolus max* Linn., also referred to the mung by some authors, is the soy bean, *Glycine max* (Linn.) Merr. (Soja max Piper, Glycine hispida Maxim.); see page 274. *Phaseolus mungo* Linn. is a species distinct from *P. aureus* Roxb. (*P. radiatus* auctt.), the urd, or black gram, of India.*

PHASEOLUS CALCARATUS Roxb. Hort. Beng. (1814) 54, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 289.

Phaseolus cylindraceus Rumph. Herb. Amb. 5: 389?

Amboina, Kati-kati, $Robinson\ Pl.\ Rumph.\ Amb.\ 233$, October 6, 1913, in thickets, altitude about 90 meters.

I am not sure that the plant here cited represents either *Phaseolus cylindraceus* Rumph. or *P. calcaratus* Roxb. The specimen is identical with the widely distributed, wild Philippine form that I have referred to *Phaseolus calcaratus* Roxb.†, which

^{*} Piper, C. V. Five Oriental species of beans. U. S. Dept. Agr. Bull. 119 (1914) 1-32, t. 1-6, gives critical consideration of the mung bean and its allies.

[†] Philip. Journ. Sci. 5 (1910) Bot. 132.

differs from typical P. calcaratus in its more scandent habit and in its smaller seeds.

VIGNA Savi

VIGNA SINENSIS (Linn.) Endl. ex Hassk. Pl. Jav. Rar. (1848) 386.

Dolichos sinensis Linn. Cent. Pl. 2 (1756) 28, Amoen. Acad. 4 (1759) 132, 326 (type!).

Dolichos sinensis Rumph. Herb. Amb. 5:375, t. 134.

This cultivated species is not represented in our Amboina collections, but the identity of *Dolichos sinensis* is unmistakable from Rumphius's figure and description. It is the commonly cultivated bean in southern China and the Indo-Malavan region with very long pods, indicated by Rumphius as "ulnam circiter longae." It is known in the Philippines as sitao, a name of Chinese origin, corresponding to the Chinese name tsiaitau quoted by Rumphius. Dolichos sinensis Rumph, is the whole basis of Dolichos sinensis Linn. Linnaeus took his name and brief description from Rumphius. I have not seen the original edition of the Centuria Plantarum 2 (1756), but in the reprint, Amoen. Acad. 4 (1759) 326, and in the reprint of Stickman's Herbarium Amboinense, l. c. 132, the Rumphian reference is the whole basis of the species as proposed by Linnaeus. early authors follow Linnaeus in quoting the Rumphian figure under Dolichos sinensis Linn.. but some of the more recent ones. Hasskarl and Miguel, quote it under Vigna sinensis where it properly belongs. Vigna sinensis (Linn.) Endl., however, has not always been correctly interpreted by recent authors, but strictly must be limited to the form of the cow pea with the very long pods.

VIGNA CYLINDRICA (Linn.) comb. nov.

Phaseolus cylindricus Linn. Amoen. Acad. 4 (1759) 132 (type!). Dolichos catjang Linn. Mant. 2 (1771) 269. Phaseolus unguiculatus auctt., non Dolichos unguiculatus Linn. Phaseolus minor Rumph. Herb. Amb. 5: 383, t. 139, f. 1.

This cultivated bean is not represented in our Amboina collections. The Rumphian figure and description of *Phaseolus minor* are the whole basis of *Phaseolus cylindricus* Linn. (1759), a name that has been overlooked by all subsequent authors, and which is not listed in Index Kewensis. It antedates *Dolichos catjang* Linn. and supplies the earliest valid specific name for the common cow pea. This form, with the short pods, by some authors has been considered either as identical with *Vigna sinensis* (Linn.) Endl. or as a variety of it. Modern

authors have generally considered it as a distinct species, some under the name Vigna unguiculata (Linn.) Walp. However, Dolichos unguiculatus Linn., the basis of Vigna unguiculata Walp., is Phaseolus unguiculatus (Linn.) Piper, in Torreya 12 (1912) 190 (Phaseolus antillanus Urban), and has nothing to do with Vigna, with which it has been confused. Linnaeus cites the Rumphian name and figure in the original publication of Dolichos catjang (1771), in which he was followed by Burman f., Murray, Lamarck, Loureiro, Willdenow, Persoon, de Candolle, Don, and other authors. Rumphius described two forms, I albus and II ruber, which Hasskarl, Neue Schlüssel (1866) 135, indicated as Vigna catjang var. alba Hassk. and V. catjang var. ruber Hassk., respectively. Both are probably merely cultural forms of the species.

VIGNA MARINA (Burm.) comb. nov.

Phaseolus marinus Burm. Index Universalis Herb. Amb. 7 (1755) [17] (type!).

Dolichos luteus Sw. Prodr. Veg. Ind. Occ. (1788) 105.

Vigna lutea A. Gray Bot. Wilkes U. S. Explor. Exped. (1854) 452. Phaseolus maritimus Rumph. Herb. Amb. 5: 391, t. 141, f. 2.

AMBOINA, Hatiwe and Eri, Robinson Pl. Rumph. Amb. 536, September, 1913, along the strand, locally known as katjang laut.

The specific name above adopted for this well-known and widely distributed strand plant seems to be the oldest valid one for it. Burman's species is typified by the Rumphian figure and description, the figure being an excellent representation of the plant commonly called *Vigna lutea* A. Gray. It is one of the few species published by Burman in the Index Universalis issued with Volume VII (Auctuarium) of the Herbarium Amboinense.

PACHYRRHIZUS * Richard

PACHYRRHIZUS EROSUS (Linn.) Urban Symb. Antil. 4 (1905) 311.

Dolichos erosus Linn. Sp. Pl. (1753) 726.

Dolichos bulbosus Linn Sp. Pl. ed. 2 (1763) 1021.

Pachyrrhizus angulatus Rich. ex DC. Prodr. 2 (1825) 402.

Pachyrrhizus bulbosus Kurz in Journ. As. Soc. Beng. 45² (1876) 246.

Cacara erosa O. Kuntze Rev. Gen. Pl. 1 (1891) 165.

Cacara bulbosa Rumph. Herb. Amb. 5: 373, t. 132, f. 2.

The common yam bean is not represented in our Amboina collections. It was introduced into Amboina from the Philippines, having been brought to the latter group from Mexico by the Spanish colonists. *Cacara bulbosa* was originally reduced by

^{*} Retained name, Vienna Code; Cacara Thou. (1805) is older.

Linnaeus to *Dolichos erosus* Linn., in Stickman Herb. Amb. (1754) 23, Amoen, Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1163; but in the second edition of his Species Plantarum, ed. 2 (1763) 1021, he placed it under *Dolichos bulbosus* Linn., which is manifestly a synonym of the earlier *D. erosus* Linn. By most recent authors it has been considered to be *Pachyrrhizus angulatus* Rich., but this name must be abandoned for the much earlier Linnean one.

PSOPHOCARPUS * Necker

PSOPHOCARPUS TETRAGONOLOBUS (Linn.) DC. Prodr. 2 (1825) 403.

Dolichos tetragonolobus Linn. in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1162, Sp. Pl. ed. 2 (1763) 1020 (type!).

Botor tetragonoloba O. Kuntze Rev. Gen. Pl. 1 (1891) 162. Lobus quadrangularis Rumph. Herb. Amb. 5: 374, t. 133.

This well-known species is not represented in our Amboina collections, but is doubtless still cultivated there as it is in most parts of the Indo-Malayan region. The Rumphian figure and description are the whole basis of *Dolichos tetragonolobus* Linn., and it has been consistently cited by all authors under that name or its modern equivalent, *Psophocarpus tetragonolobus* DC.

DOLICHOS Linnaeus

DOLICHOS LABLAB Linn. Sp. Pl. (1753) 725.

Dolichos lignosus Linn. l. c. 726.

Dolichos albus Lour. Fl. Cochinch. (1790) 439.

Lablab vulgaris Savi Diss. (1821) 19.

Lablab perennans DC. Prodr. 2 (1825) 402.

Cacara Rumph. Herb. Amb. 5: 378, t. 136.

Cacara alba Rumph. Herb. Amb. 5: 380, t. 137.

Amboina, Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 552, August 23, 1913, locally known as kakara puti.

The specimen represents one of the several distinct forms of this variable species; in the shape of its pod it is somewhat different from both of the forms figured by Rumphius. Two distinct forms are figured and described by Rumphius: Cacara, with purple flowers, and Cacara alba, with white flowers. These are now, however, generally considered to represent a single species. Cacara was originally reduced by Linnaeus to Dolichos lignosus Linn., in Stickman Herb. Amb. (1754) 23, and has been cited by various authors under the names Dolichos altissimus Lour. and Lablab vulgaris Savi, both synonyms of Dolichos

^{*} Retained name, Vienna Code; Botor Adans. (1763) is older.

lablab Linn. Cacara alba was cited by Loureiro in the original description of Dolichos albus Lour., Fl. Cochinch. (1790) 439, and has been cited by various authors under Lablab perennans DC., Lablab vulgaris Savi, and Lablab cultratus DC., all synonyms of Dolichos lablab Linn.

Some authors, after Adanson, have maintained *Lablab* as a genus distinct from *Dolichos* Linnaeus, but I interpret *Dolichos lablab* Linn. as the type of the genus *Dolichos*, it being the first species cited in the Species Plantarum, while the generic description, as given in the Genera Plantarum ed. 5 (1754) 324, conforms to the characters of this species.

LEGUMINOSÆ OF UNCERTAIN STATUS

Crotalaria montana VIII tsjeme tsjeme Rumph. Herb. Amb. 6: 146.

A shrub from Macassar, Celebes, insufficiently described, but manifestly a representative of the *Leguminosae*. Hasskarl, Neue Schlüssel (1866) 176, thought that it might be a species of *Sophora*, near *S. glabra* Hassk.

Aeschynomene theophrasti Rumph. Herb. Amb. 5: 124.

Burman f. referred this to Aeschynomene aspera Linn., but there is no warrant for this reduction. Rumphius merely discusses the plant as described by Theophrastus.

OXALIDACEAE

AVERRHOA Linnaeus

AVERRHOA BILIMBI Linn. Sp. Pl. (1753) 428.

Blimbingum teres Rumph. Herb. Amb. 1: 118, t. 36.

Amboina, Binting, Robinson Pl. Rumph. Amb. 219, August 13, 1913, locally known as blimbing.

This is one of the few Rumphian species that Linnaeus reduced in the first edition of his Species Plantarum, the Rumphian citation appearing in Sp. Pl. (1753) 428, and in all of Linnaeus's subsequent works in which the species is considered. The reduction is certainly correct, and Linnaeus has been followed by all subsequent authors.

AVERRHOA CARAMBOLA Linn. Sp. Pl. (1753) 428.

Prunum stellatum Rumph. Herb. Amb. 1: 115, t. 35.

Amboina, from cultivated plants near the town of Amboina, Robinson Pl. Rumph. Amb. 218, August 23, 1913, locally known as blimbing manis.

This Rumphian species, like the preceding one, was reduced by Linnaeus in the first edition of his Species Plantarum (1753) 428, appears in the subsequent writings of the same author in which *Averrhoa* is considered, and the reduction, certainly correct, has been accepted by all subsequent authors.

BIOPHYTUM de Candolle

BIOPHYTUM SENSITIVUM (Linn.) DC. Prodr. 1 (1824) 690.

Oxalis sensitiva Linn. Sp. Pl. (1753) 434.

Herba sentiens Rumph. Herb. Amb. 5: 301, t. 104, f. 2.

Amboina, Batoe mera, Robinson Pl. Rumph. Amb. 217, July 20, 1913, along ditches in rocky soil, altitude 5 to 10 meters.

Herba sentiens Rumph. was reduced by Linnaeus to Oxalis sensitiva, in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1038, Sp. Pl. ed. 2 (1762) 622, which is certainly correct. The plant is now known as Biophytum sensitivum (Linn.) DC., and most authors who have cited the Rumphian figure since 1824 have so placed it. Miquel, however, Fl. Ind. Bat. 1² (1858) 134, considers that the Rumphian figure represents Oxalis reinwardtii Zucc., which he maintains as a species distinct from Biophytum sensitivum (Linn.) DC.

OXALIS Linnaeus

OXALIS REPENS Thunb. Diss. Oxal. (1781) 16.

Oxys lutea indica Rumph. Herb. Amb. 5: 277.

Amboina, on walls in the town of Amboina, Robinson Pl. Rumph. Amb. 216, July 22, 1913, locally known as daun kelauwar.

Burman f., Fl. Ind. (1768) 107, and Loureiro, Fl. Cochinch. (1790) 285, place Oxys lutea indica under Oxalis corniculata Linn., and most authors have considered Oxalis repens Thunb. to be a synonym of the older Linnean species. However, Dr. B. L. Robinson * has shown that two species are involved in what is generally called Oxalis corniculata Linn. The actual Amboina specimens, like most or all the material from the Malayan region usually called Oxalis corniculata Linn., are actually referable to Thunberg's species, as the two forms are distinguished by Doctor Robinson.

RUTACEAE

FAGARA Linnaeus

FAGARA TORVA (F. Muell.) Engl. in Engl. & Prantl Nat. Pflanzenfam. 3 (1895) 119.

Zanthoxylum torvum F. Muell. Fragm. 7 (1871) 140.

Zanthoxylum glandulosum T. & B. Cat. Hort. Bogor. (1866) 234, nomen nudum.

Nugae sylvarum silvestris Rumph. Herb. Amb. 5: 124.

Amboina, Paso, on trees at low altitudes, Robinson Pl. Rumph. Amb. 250, October 29, 1913.

^{*} Journ. Bot. 44 (1906) 391.

RUTACEAE 289

Hasskarl, Neue Schlüssel (1866) 99, has suggested that Nugae sylvarum silvestris might be a Zanthoxylum. With Amboina material that certainly represents the Rumphian species, this supposition can now be verified. The specimen is a very close match for Hochreutiner's Pl. Bogor. Exsiccatae No. 28, which is typical Zanthoxylum glandulosum T. & B., and which Hochreutiner interprets as typical Zanthoxylum torvum F. Muell. The same form is found in Luzon, Leyte, and Mindanao in the Philippines, so that the known range of the species is now from Luzon to Java, the Moluccas, and tropical Australia.

FAGARA sp.

Panax? anisum DC. Prodr. 4 (1830) 254 (type!).

Nothopanax? anisum Miq. Fl. Ind. Bat. 1 1 (1857) 766 (type!).

Anisum moluccanum Rumph. Herb. Amb. 2: 131, t. 42.

This species is not represented in our Amboina collections. The description in all respects applies to Fagara (Zanthoxylum), but without specimens I am unable definitely to refer Anisum moluccanum Rumph. to any described Malayan species. So far as can be determined from the description, Panax anisum DC. is based wholly on Rumphius, Nothopanax anisum Miq. being merely a transfer of de Candolle's name. Henschel erroneously referred the Rumphian species to Zanthoxylum aromaticum Willd., an American species. The figure closely resembles Fagara avicennae Lam.

EVODIA Forster

EVODIA LATIFOLIA DC. Prodr. 1 (1824) 724 (type!). Ampacus latifolia Rumph. Herb. Amb. 2: 186, t. 61.

This species was based wholly on Rumphius and must be interpreted entirely from the Rumphian figure and description. Evodia latifolia DC. has been interpreted by recent authors as being represented by Philippine specimens collected by Cuming, but the Philippine material has been described under two different names, Evodia bintoco Blanco and Evodia philippinensis Merr. Burman f. thought that the plant figured by Rumphius might be a species of Rhus, Lamarck a Premma or Vitex, and Poiret, with doubt, an Aubertia. De Candolle, however, based his Evodia latifolia wholly on Rumphius. It has also been called Zanthoxylum latifolium Don, Fagara latifolia Roxb., and Zanthoxylum rumphianum Cham. It is undoubtedly a true Evodia. Miquel, Ann. Mus. Bot. Lugd. Bat. 3 (1867) 244, has redescribed Evodia latifolia DC. from Halmaheira specimens, and his description conforms closely

to Philippine material referred to de Candolle's species. Amboina specimens are desirable in order definitely to determine the true status of the species.

EVODIA AMBOINENSIS sp. nov.

Ampacus angustifolia Rumph. Herb. Amb. 2: 188, t. 62.

AMBOINA, Koesoejoesoe sereh, Robinson Pl. Rumph. Amb. 251 (type), October 3, 1913, in light woods at an altitude of about 225 meters; hills behind the town of Amboina, in light forests, Robinson Pl. Rumph. Amb. 252, October 27, 1913, locally known as gendarussa.

Arbor parva, 8 ad 10 m alta, glabra, vel ramulis junioribus inflorescentiisque plus minusve cinereo-puberulis; foliis 3-foliolatis, foliolis petiolatis, firme chartaceis ad subcoriaceis, oblongis, usque ad 16 cm longis, acuminatis, basi acutis ad rotundatis, nervis utrinque 10 ad 12, subtus prominentibus; paniculis axillaribus, pyramidatis, usque ad 13 cm longis, ramis patulis, multifloris, floribus circiter 2.5 mm longis, ovario pubescente.

A tree 8 to 10 m high, nearly glabrous, or the young branchlets and parts of the inflorescence more or less cinereous-puberulent. Branches terete, reddish-brown, often somewhat compressed at the nodes, smooth. Leaves opposite, 3-foliolate, their petioles 4 to 7 cm long; leaflets in general oblong, firmly chartaceous to subcoriaceous, 9 to 16 cm long, 4 to 7 cm wide, entire, apex rather prominently acuminate, base acute to rounded, somewhat shining when dry, subolivaceous or somewhat pale, quite glabrous on both surfaces; lateral nerves 10 to 12 on each side of the midrib, slender but prominent, anastomosing, the reticulations lax; petiolules 3 to 5 mm long. Panicles axillary, pyramidal, slightly puberulent or nearly glabrous, up to 13 cm long, the branches spreading, the lower ones up to 7 cm long. Flowers white, numerous, their pedicels about 2 mm long. Sepals 4, ovate, obtuse, 0.5 mm long. Petals 4, elliptic-ovate, glabrous, slightly apiculate at the apex, 2 to 2.5 mm long; filaments elongated, glabrous; anthers 1.2 mm long. Ovary 4-lobed, pubescent. Fruit small, composed of two or three, nearly free, dehiscent cocci about 3.5 mm in length, the seeds blue-black, shining, about 2 mm in diameter.

Ampacus angustifolius has been confused with Evodia triphylla DC. by practically all authors since the publication of the latter species in de Candolle's Prodromus 1 (1824) 724, which in turn was based on Fagara triphylla Lam., Encycl. 2 (1788) 447. The type of Fagara triphylla was a Philippine specimen, and it is Melicope triphylla (Lam.) Merr., in Philip. Journ. Sci. 7 (1912) Bot. 375, where the complicated synonymy

RUTACEAE 291

of the species is discussed. It is manifest, however, that most authors interpreted $Evodia\ triphylla\ (Lam.)\ DC.$ not from the Philippine specimen actually described, but from the Rumphian figure, for Lamarck in the original description of $Fagara\ triphylla\ adds$ a reference to $Ampacus\ angustifolia\ Rumph$. The names $Fagara\ triphylla\ Lam.$, $Evodia\ triphylla\ DC.$, and $Zanthoxylum\ triphyllum\ Don\ all\ refer$ to $Melicope\ triphylla\ (Lam.)$ Merr. as synonyms and cannot be applied to the Amboina plant. It was erroneously reduced by Miquel, Fl. Ind. Bat. 1² (1859) 671, to $Zanthoxylum\ zeylanicum\ DC.$

Evodia triphylla (Lam.) DC. has been given a range of from Tenasserim to Japan southward through Malaya to New Guinea. and to it have been referred specimens representing at least four distinct species in two different genera. As already pointed out by me, true Zanthoxylum triphyllum Lam.=Evodia triphylla DC, is Melicope triphylla (Lam.) Merr., a species confined to the Philippines. Chinese material generally, but erroneously, referred to Evodia triphylla DC, is Evodia pteleaefolia (Champ.) Merr., in Philip. Journ. Sci. 7 (1912) Bot. 377; material from India, the Malay Peninsula, and the Sunda Islands for the most part is Evodia lunur-ankenda (Gaertn.) Merr., l. c. 378; while the actual Ampacus angustifolius Rumph. of Amboina represents still another species, Evodia amboinensis Merr. described above. This is known only from Amboina, but material from other parts of the Moluccas and from New Guinea, erroneously referred by other authors to Evodia triphylla DC., may prove to be identical with the Amboina species.

FLINDERSIA R. Brown

FLINDERSIA AMBOINENSIS Poir. in Lam. Encycl. Suppl. 4 (1816) 650 (type!).

Flindersia radulifera Spreng. Geschicht. Bot. 2 (1818) 76 (type!), ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 208.

Arbor radulifera Rumph. Herb. Amb. 3: 201, t. 129.

This species is not represented in our Amboina collections. Arbor radulifera Rumph. is the whole basis of Flindersia amboinensis Poir. and of F. radulifera Spreng. The latter name does not appear in Index Kewensis. All descriptions of the species published, up to and including that of A. de Candolle,* have been based on the data given by Rumphius, no botanist having had specimens. It is cultivated in the botanic garden at Buitenzorg, Java, according to botanical specimens named

^{*} Meliaceae in DC. Monog. Phan. 1 (1878) 735.

Flindersia amboinensis Poir. from "III-A-7" and distributed from that institution.

MURRAYA * Koenig

MURRAYA PANICULATA (Linn.) Jack in Malay Miscel. 1 (1820) 31.

Chalcas paniculata Linn. Mant. 1 (1767) 68.

Chalcas camuneng Burm. f., Fl. Ind. (1768) 104.

Murraya scandens Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 233 (Neue Schlüssel 91) (type!).

Camunium japonense Rumph. Herb. Amb. 5: 29, t. 18, f. 2.

Camunium javanicum Rumph. Herb. Amb. 5: 27.

Camunium vulgare Rumph. Herb. Amb. 5: 26, t. 17.

AMBOINA, Robinson Pl. Rumph. Amb. 249, September 13, 1913, from cultivated trees in the town of Amboina, locally known as kamuneng; exactly Camunium japonense Rumph.!

While the figures given by Rumphius represent two distinct forms, it is very doubtful whether or not two species are represented. Specimens are found in herbaria that apparently present all intergradations between the form with small leaflets (Camunium japonense Rumph.) and the form with fewer and larger leaflets (Camunium vulgare Rumph.). If but one species be represented, then the oldest valid name is Murraya paniculata (Linn.) Jack, and pending a critical revision of the genus it is probably best to consider both forms described by Rumphius as representing one variable species.

Linnaeus, in Stickman Herb. Amb. (1754) 18, Amoen. Acad. 4 (1759) 128, erroneously reduced Camunium japonense to Vitex pinnata Linn., the latter being given by some authors as a synonym of Aglaia odorata Lour. However, Vitex pinnata Linn. was based on Fl. Zeyl. 415, and Hermann's specimen is Vitex altissima Linn.† The reduction of Camunium japonense to Murraya exotica Linn. was made by Lamarck, Encycl. 4 (1797) 382, in which he has been followed by numerous authors.

Camunium vulgare Rumph. was placed by Burman f., Fl. Ind. (1768) 104, as a synonym of Chalcas camuneng, but Chalcas camuneng Burm. f. was primarily based on Javan specimens from cultivated plants. Linnaeus based his Chalcas paniculata on Burman's species and also cited Rumphius. Whether the form actually in Burman's hands was the one with small leaflets (typical Murraya exotica Linn.) or with fewer and larger leaflets is impossible to determine from the original description, but it was probably the former. Murraya sumatrana

† See Trimen, Fl. Ceyl. 3 (1895) 358.

^{*} Retained name, Brussels Congress; Camunium Adans. (1763), Chalcas Linn. (1767), and Bergera Koenig (1771) are older.

Roxb. is apparently quite the same as Camunium vulgare Rumph.; while Murraya scandens Hassk., which does not appear in Index Kewensis, must be typified wholly by the Rumphian figure and description. The forms mentioned by Hasskarl, Neue Schlüssel (1866) 91, as Camunium javanicum and Camunium e Macassar are both probably referable to Murraya paniculata (Linn.) Jack as here interpreted.

FERONIA Correa

FERONIA LIMONIA (Linn.) Swingle in Journ. Wash. Acad. Sci. 4 (1914) 328.

Schinus limonia Linn. Sp. Pl. (1753) 389.

Limonia acidissima Linn. Sp. Pl. ed. 2 (1762) 554.

Feronia elephantum Correa in Trans. Linn. Soc. 5 (1800) 225.

Anisifolium Rumph. Herb. Amb. 2: 133, t. 43.

Nothing resembling Anisifolium appears in our Amboina collections. Regarding the Rumphian figure, Swingle states that it is "the wood apple or a very closely allied species." Linnaeus made the reduction to his Schinus limonia, in Stickman Herb. Amb. (1759) 9, Amoen. Acad. 4 (1759) 121, Syst. ed. 10 (1759) 1034, and in his Species Plantarum, ed. 2 (1762) 554, to Limonia acidissima, the latter reduction being followed by most authors. Hamilton placed it under Feronia elephantum Corr., while Hasskarl places it under Hesperethusa acidissima Roem., a synonym of Feronia limonia (Linn.) Swingle. Rumphius's material was from Java where the species is still cultivated.

AEGLE * Correa

AEGLE MARMELOS (Linn.) Correa in Trans. Linn. Soc. 5 (1800) 223.

Crataeva marmelos Linn. Sp. Pl. (1753) 444.

Bilacus marmelos O. Kuntze Rev. Gen. Pl. 1 (1891) 98.

Bilacus Rumph. Herb. Amb. 1: 197, t. 81.

Bilacus taurinus Rumph. Herb. Amb. 1: 199.

This reduction of *Bilacus* was first made by Linnaeus, in Stickman Herb. Amb. (1754) 8, Amoen. Acad. 4 (1759) 120, Sp. Pl. ed. 2 (1762) 637, and is certainly the correct disposition of it. It was described and figured from cultivated specimens.

I am unable definitely to place Bilacus amboinensis silvestris Rumph., Herb. Amb. 1: 200, t. 28. It was erroneously reduced by Linnaeus, in Stickman Herb. Amb. (1754) 8, Amoen. Acad. 4 (1759) 120, to Crataeva tapia Linn. Hamilton suggested that it might be an undescribed species of Aegle, but this is improbable. The figure strongly resembles Crataeva religiosa Forst.,

^{*} Retained name, Brussels Congress; Belou Adans. (1763) is older.

but the description does not conform to Crataeva in the seed characters: "In centro quatuor vel quinque locantur ossicula, a sese invicem remota, lanosa seu pilosa instar seminum Gossypii." In the original description Rumphius states that the flowers were unknown to him; but in the plate, drawn after he became blind, the flowers are shown. His original material was from Manipa, Sula Islands, and Celebes, but in the supplementary data taken from the Auctuarium and appended to the original description he cites specimens from Leytimor, Amboina, and states regarding the fruit: "Fructus est instar ovi minoris avis Casuarii." It is possible that the description was based on material from two different species. The figure, however, conforms to the characters of Bilacus amboinensis silvestris as given in the text. In some respects the figure and description suggest Chaetospermum, typified by the Philippine Chaetospermum glutinosum (Blanco) Swingle, but Bilacus amboinensis silvestris Rumph, can hardly belong in the Rutaceae.

FORTUNELLA Swingle

FORTUNELLA JAPONICA (Thunb.) Swingle in Journ. Wash. Acad. Sci. 5 (1915) 171, f. 3.

Citrus japonica Thunb. Nov. Act. Upsal. 3 (1780) 199.

Citrus madurensis Lour. Fl. Cochinch. (1790) 467.

Citrus inermis Roxb. Fl. Ind. ed. 2, 3 (1832) 393.

Limonellus madurensis Rumph. Herb. Amb. 2: 110, t. 31.

Loureiro, Fl. Cochinch. (1790) 467, first reduced Limonellus madurensis to his Citrus madurensis, which Swingle considers to be a synonym of Citrus japonica Thunb.=Fortunella japonica Swingle. The plant is a native of China, and the only possible objection I note to the reduction of Limonellus madurensis is that Citrus japonica is not known to occur in the Malay Archipelago. However, Rumphius states that the plant was cultivated in Madura and at Batavia, Java, where it may have been introduced from China and where it has failed to persist. Hasskarl, Neue Schlüssel (1866) 32, suggests Atalantia monophylla DC. as the proper reduction of Limonellus madurensis Rumph., but judging from the figure and description given by Rumphius the plant can hardly have been an Atalantia.

MEROPE M. Roemer

MEROPE ANGULATA (Willd.) Swingle in Journ. Wash. Acad. Sci. 5 (1915) 423.

Citrus angulata Willd. Sp. Pl. (1800) 1426 (type!). Sclerostylis spinosa Blume Bijdr. (1825) 134.

Limonia spinosa Spreng. Syst. Veg. 42 (1827) 162.

Glycosmis spinosa Dietr. Syn. Pl. 2 (1840) 1409.

Merope spinosa M. Roem. Syn. Mon. Hesp. 1 (1846) 44.

Limonia angulosa W. & A. ex Miq. Fl. Ind. Bat. 1 2 (1859) 521 (type!).

Atalantia longispina Kurz in Journ. As. Soc. Beng. 41 ² (1872) 295. Gonocitrus angulatus Kurz l. c. 42 ² (1874) 228, t. 18.

Paramignya longispina Hook. f. Fl. Brit. Ind. 1 (1875) 511.

Paramignya angulata Kurz in Journ. As. Soc. Beng. 43 ³ (1874) 135. Atalantia spinosa Hook. f. ex Koord. Exkurs. Fl. Java 2 (1912) 427.

Limonellus angulosus Rumph. Herb. Amb. 2: 110, t. 32.

The above formidable list of synonyms is copied from Swingle's paper on *Merope*.* He has there given a critical consideration of *Merope angulata* (Willd.) Swingle and its numerous synonyms. Rumphius's figure and description are the whole basis of *Citrus angulata* Willd. and hence typify the species, which on Wight and Arnott's suggestion was transferred to *Limonia* as *L. angulosus* W. & A. by Miquel; it is, therefore, also the type of *Limonia angulosa* W. & A. It is also the name-bringing synonym of both *Gonocitrus angulatus* Kurz and *Paramignya angulata* Kurz. Kurz was the first to recognize the identity of *Limonellus angulosus* Rumph. and its true relationships.

CITRUS Linnaeus

A number of representatives of the genus Citrus are figured and described by Rumphius, and these have been variously interpreted by botanists. Some maintain that the species of this genus are reducible to a few polymorphous types with numerous varieties, while others maintain that the genus is composed of a large number of closely allied species. probabilities are that there are relatively few species and that these have yielded numerous horticultural forms and hybrids; it is not at all improbable that natural hybrids occur. In such a genus as Citrus it is naturally to be expected that authors have widely differed in interpreting the forms described by Rumphius. In relatively few cases is it possible definitely to determine from his figures and descriptions alone the exact status of the several forms in our present system of classification. The Robinson Amboina collection presents but two species of Citrus, the common lime and the common pomelo, and naturally helps but little in determining the status of the Rumphian species or forms. Until extensive field work is prosecuted in the whole Malayan region and until the entire genus Citrus undergoes a very thorough and critical revision, any attempt

^{*} Merope angulata, a salt-tolerant plant related to Citrus, from the Malay Archipelago. *Journ. Wash. Acad. Sci.* 5 (1915) 420-425.

to interpret the Rumphian figures and descriptions must be unsatisfactory. Linnaeus, in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 121, reduced most of the forms that Rumphius figured to Citrus medica Linn. and Citrus aurantium Linn., which disposition of them is not at all satisfactory; yet succeeding attempts to interpret them are hardly more satisfactory. It is probable that all or most of them have been described by succeeding authors, but from descriptions alone it is quite impossible to determine precisely to what forms or species the Rumphian plants should be reduced.

CITRUS AURANTIFOLIA (Christm.) Swingle in Journ. Wash. Acad. Sci. 3 (1913) 465.

Limonia aurantifolia Christm. Pflanzensyst. 1 (1777) 618. Limonia acidissima Houtt. Handl. 2° (1774) 444, non Linn. Citrus lima Lunan Hort. Jamaic. 2 (1814) 451. Citrus acida Roxb. Fl. Ind. ed. 2, 3 (1832) 390. Citrus notissimus Blanco Fl. Filip. (1837) 607. Citrus limonellus Hassk. in Flora 25 (1842) Beibl. 43. Limonellus Rumph. Herb. Amb. 2: 107, t. 29.

Amboina, Binting, Robinson Pl. Rumph. Amb. 247, August 13, 1913, along roadsides, locally known as limon china.

This is the common lime. Limonellus was erroneously reduced by Linnaeus, in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 121, to Citrus aurantium Linn. Both Houttuyn and Christmann cite the Rumphian figure, and Christmann's specific name is the oldest valid one for the species, as shown by Swingle. Blume cites the Rumphian plant as a synonym of Citrus javanica Blume, Bijdr. (1825) 140, while Hasskarl, Neue Schlüssel (1866) 32, places it under Citrus limonellus Hassk., the specific name being apparently taken from Rumphius. The form figured on the same plate by Rumphius, fig. A, Hasskarl, l. c., considers as a variety, calling it Citrus limonellus var. oxycarpus Hassk.

CITRUS MAXIMA (Burm.) comb. nov.

Aurantium maximum Burm. ex Rumph. Herb. Amb. Auctuarium (1755) Ind. Univ. [16] (type!).

Citrus grandis Osbeck Dagbok Ostind. Resa (1757) 98.

Citrus aurantium Linn. var. grandis Linn. Sp. Pl. (1753) 783.

Citrus decumana Linn. Syst. ed. 12 (1767) 508.

Limo decumanus Rumph. Herb. Amb. 2: 96, t. 24, f. 2.

Amboina, Way tommo, Robinson Pl. Rumph. Amb. 248, August 17, 1913, altitude about 60 meters, locally known as limon.

The common pomelo is commonly known as Citrus decumana Linn., but there are at least two older names, the older of which is here accepted. Aurantium maximum Burm., a name

not listed in Index Kewensis, is validly published by Burman in the general index to the Herbarium Amboinense by citation of the Rumphian name and description. It is to be noted that Burman on page [11] of the Index Universalis refers Limo decumanus Rumph. to Citrus aurantium Linn. Swingle, in Sargent Pl. Wils. 2 (1914), has already pointed out that Citrus grandis Osbeck antedates the publication of Citrus decumana Linn. and accordingly accepted Osbeck's specific name. Three forms described by Rumphius, II, III, and IV, are all probably referable here; although Hasskarl, Neue Schlüssel (1866) 31, places them under the varieties pyriformis Hassk., leucosarca Hassk., and dulcis Hassk., respectively.

CITRUS OBVERSA Hassk. Cat. Hort. Bogor. (1844) 218.

Limo ferus Rumph. Herb. Amb. 2: 106, t. 26, f. 3, t. 28.

In this reduction I merely follow Hasskarl, Neue Schlüssel (1866) 32. The figures strongly resemble forms of *Citrus hystrix* DC., as de Candolle's species is currently interpreted; and *Limo ferus* Rumph., with *Citrus obversus* Hassk., may be merely a form of this polymorphous species. At any rate, the specific status of *Citrus obversa* Hassk. is very doubtful.

CITRUS BERGAMIA Risso Hist. Nat. Or. Europ. Merid. (1826-28) t. 53. Limo taurinus Rumph. Herb. Amb. 2: 105.

The status of both *Citrus bergamina* Risso, as a species, and of *Limo taurinus* Rumph. is very doubtful. The reduction follows Miquel and Hasskarl. I suspect that *Limo taurinus* is merely a form of *Citrus hystrix* DC.

CITRUS MEDICA Linn. Sp. Pl. (1753) 782.

Malum citrium Rumph. Herb. Amb. 2: 99, t. 25.

This was placed by Loureiro, Fl. Cochinch. (1790) 465, under *Citrus medica* Linn., and by Hasskarl, Neue Schlüssel (1866) 31, under *Citrus grandis* Hassk. var. *oblonga* Hassk.

CITRUS HYSTRIX DC. Cat. Hort. Monsp. (1813) 97.

Limo tuberosus Rumph. Herb. Amb. 2: 101, t. 26, f. 1. Limo unguentarius Rumph. Herb. Amb. 2: 103. Limo agrestis Rumph. Herb. Amb. 2: 104, t. 27.

The forms with the rugose fruits appear to be the same as the Philippine form described by Blanco as Citrus torosa. Limo tuberosus has been reduced to Citrus medica Linn. var., to C. hystrix DC. var., and to Citrus bergamia Risso var. unguentaria Roem. Limo unguentarius has been reduced to Citrus medica Linn. var., to C. hystrix DC. var., and to C. bergamia

Risso var. unguentaria Roem.; while Limo agrestis has been reduced to Citrus medica Linn. var., C. hystrix DC. var., C. bergamia Risso var. ventricosa Roem., Papeda rumphii Hassk., and Citrus papeda Miq.

CITRUS AURANTIUM Linn. Sp. Pl. (1753) 782, var.

Aurantium acidum Rumph. Herb. Amb. 2: 111, t. 33.

This figure seems to represent one of the sour oranges. It has been reduced by various authors to *Citrus fusca* Lour., *C. aurantium* Linn. var. *vulgaris* Risso, *C. vulgaris* Risso, *C. amara* Hassk., and *C. bigaradia* Risso.

To Citrus aurantium should probably also be referred Aurantium verrucosum Rumph., Herb. Amb. 2:116, of Banda, and Aurantium pumilum madurense Rumph., l. c., of Madura, and probably also the forms indicated as Aurantium acidum II and III on page 112.

CITRUS NOBILIS Lour. Fl. Cochinch. (1790) 466.

Aurantium sinense Rumph. Herb. Amb. 2: 113. Aurantium sinense II Rumph. Herb. Amb. 2: 113.

This is the common loose-skinned orange commonly referred to *Citrus nobilis* Lour. Hasskarl, Neue Schlüssel (1866) 33, refers A. sinense to Citrus nobilis var. melanocarpa Hassk. and A. sinense II to C. nobilis var. microcarpa Hassk.

CITRUS sp.

Limo ventricosus Rumph. Herb. Amb. 2: 102, t. 26, f. 2.

The figure represents a form somewhat approaching the true lemon. It has been reduced by various authors to *Citrus medica* Risso, *C. hystrix* DC., *C. aurantium* Linn. var. *limonum* Risso, *C. bergamia* Risso var. *ventricosa* Roem., and *C. limonum* Risso.

CITRUS sp.

Limonellus aurarius Rumph. Herb. Amb. 2: 109, t. 30.

This has been reduced by various authors to Citrus aurantium Linn., C. limetta Risso, C. limetta var. auraria Risso, and C. hystrix DC. Its true position is very uncertain, but it may be a form of Citrus limetta Risso.

CITRUS sp.

Aurantium verrucosum Rumph. Herb. Amb. 2: 115, t. 35.

This has been reduced by various authors to Citrus nobilis Lour., C. aurantium Linn., C. pompelmos var. racemosus Risso, C. decumana var. racemosa Roem., and C. decumana var. verrucosa Miq.; while Hasskarl, Neue Schlüssel (1866) 33, sug-

gests that it may be Citrus macracantha Hassk. The figure might be either a form of Citrus aurantium Linn. or a small-fruited form of Citrus maxima (Burm.) Merr. (C. decumana Linn.).

SIMARUBACEAE

BRUCEA J. S. Miller

BRUCEA AMARISSIMA (Lour.) Merr. in Philip. Journ. Sci. 10 (1915) Bot. 18.

Gonus amarissimus Lour. Fl. Cochinch. (1790) 658.

Brucea sumatrana Roxb. Hort. Beng. (1814) 12 (type!), Fl. Ind. ed. 2, 1 (1832) 449.

Lussa radja Rumph. Herb. Amb. 7: 27, t. 15.

This characteristic and widely distributed Malayan species is not represented in our Amboina collections. The Rumphian figure is the full basis of *Brucea sumatrana* Roxb. by citation in the original place of publication, Hort. Beng. (1814) 12. It is also cited by Loureiro in the original description of his *Gonus amarissimus*, Fl. Cochinch. (1790) 658. The form "II ex Solora" Rumph., l. c. 28, may be referable to the same species; it was characterized as differing from the Javan form in its longer inflorescences and in its larger and more intensely bitter fruits.

AILANTHUS * Desfontaines

Allanthus integrifolia Lam. Encycl. 3 (1791) 417 (type!).

Ailanthus moluccana DC. Prodr. 2 (1825) 89 (type!).

Arbor coeli Rumph. Herb. Amb. 3: 205, t. 132.

This species is not represented in our Amboina collections. Arbor coeli Rumph. is the whole basis of Ailanthus (Aylanthus) integrifolia Lam. as published in 1791, while A. moluccana DC., 1825, is merely a new name for Lamarck's species, so that both must primarily be interpreted from the Rumphian figure and description. Linnaeus, Mant. 2 (1771) 379, thought that it might possibly be referable to Adenanthera falcataria Linn., which is Albizzia falcata (Linn.) Backer (see p. 249); while Henschel erroneously referred it to Connarus pentagynus Lam.

SAMADERA † Gaertner

SAMADERA INDICA Gaertn. Fruct. 2 (1791) 352, t. 156. Lanius Rumph. Herb. Amb. 3: 194, t. 124.

This species is not represented in our Amboina collection.

^{*} Retained name, Vienna Code; Pongelion Adans. (1763) is older.

[†] Retained name, Vienna Code; Locandi Adans. (1763) is older.

The figure is very poor and does not conform very well with Samadera indica Gaertn., although the plant described is certainly referable to this genus. The only previously suggested reduction is Teysmann's opinion, quoted by Hasskarl, Neue Schlüssel (1866) 66, that it was a species of Samadera. Botanical material from the Moluccas may show Lanius to be specifically distinct from Samadera indica Gaertn.

SOULAMEA Lamarck

SOULAMEA AMARA Lam. Encycl. 1 (1785) 449.

Cardiocarpus amarus Reinw. Syll. Ratisb. 2 (1828) 14. Rex amaroris Rumph. Herb. Amb. 2: 129, t. 41.

The Rumphian species was first reduced by Linnaeus to *Ophio-xylon serpentinum* Linn., in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 121, an entirely erroneous disposition of it. Lamarck cites *Rex amaroris* Rumph. as a synonym of *Soulamea amara* Lam. in the original description of the genus and species, the description being based on actual specimens from New Britain; it is barely possible that the Moluccan form is specifically distinct from the New Britain one, but this can be determined only by a comparison of specimens from these localities.

BURSERACEAE

CANARIUM Linnaeus

CANARIUM DECUMANUM Gaertn. Fruct. 2 (1791) 99, t. 102.

Pimela decumana Blume Mus. Bot. 1 (1850) 223. Canariopsis decumana Miq. Fl. Ind. Bat. 1 2 (1859) 652. Canarium decumanum Rumph. Herb. Amb. 2: 166, t. 55.

This is not represented in our Amboina collections, and like several other species of the genus it must be interpreted largely from the description and the figure given by Rumphius. It is almost certain that the species as described by Engler, in DC. Monog. Phan. 4 (1883) 132, under *Canarium decumanum* is not the same as the plant that Rumphius described. The status of the species must await the results of further field work.

CANARIUM LEGITIMUM (Blume) Miq. Fl. Ind. Bat. 1 ² (1859) 647.

Pimela legitima Blume Mus. Bot. 1 (1850) 222.

Dammara nigra legitima Rumph. Herb. Amb. 2: 162, t. 53.

This is not represented in our Amboina collections. It is probable that Blume in describing the species correctly reduced

the Rumphian plant. Blume's species was based on actual specimens with a reference to the Rumphian name and figure.

CANARIUM BALSAMIFERUM Willd. Sp. Pl. 4 2 (1804) 760 (type!).

Boswellia balsamifera DC. Prodr. 2 (1825) 76 (type!). Pimela glabra Blume Mus. Bot. 2 (1850) 222 (type!). Canariopsis glabra Miq. Fl. Ind. Bat. 1 2 (1859) 653 (type!). Canarium odoriferum leve Rumph. Herb. Amb. 2: 156, t. 50.

This is not represented in our Amboina collections. The status of the species is wholly doubtful, and all the names cited above must be interpreted entirely from Rumphius, as all are based solely on his description and figure. Like a number of other species of *Canarium*, the exact status of *Canarium balsamiferum* Willd. must await further botanical exploration of Amboina; the only certain thing about the status of the species is that it is a true *Canarium*.

CANARIUM COMMUNE Linn. Mant. 1 (1767) 127 (type!).

Canarium mehenbethene Gaertn. Fruct. 2 (1791) 98, saltem quoad syn. Rumph.

Canarium indicum Linn. Amoen. Acad. 4 (1759) 143 pro minore parte. Canarium moluccanum Blume Mus. Bot. 1 (1850) 216.

Canarium vulgare Rumph. Herb. Amb. 2: 145, t. 47, (excl. f. E, F. G?).

Amboina, Binting and the town of Amboina, Robinson Pl. Rumph. Amb. 381, September 27, 1913, in flower; Gelala, Robinson Pl. Rumph. Amb. 380, July 16, 1913, in fruit, locally known as kanari.

Canarium vulgare Rumph, is the whole basis of Canarium commune Linn., as originally published by Linnaeus in his Mantissa 1 (1767) 127, and the species must be interpreted from the Rumphian reference. The species has been correctly interpreted by practically all authors, as it is widely destributed in the Malay Archipelago and is a characteristic and well-known one. Canarium indicum Linn., not listed in Index Kewensis, is an older name, but I believe it should be abandoned for the reason that Linnaeus cited under it all the species of Canarium figured by Rumphius, t. 47 to 56, inclusive. He abandoned the name, apparently realizing later that numerous species were involved. and made the first plate, t. 47, the type of his Canarium commune. While the first plate cited under Canarium indicum, that is t. 47, might be interpreted as the type of Canarium indicum Linn., it really represents that species only in small part. I can see no valid reason for considering Canarium moluccanum Blume other than a form of C. commune Linn. Figures E, F, and G, of plate 47, probably represent merely variations of Canarium commune Linn. Hasskarl, Neue Schlüssel (1866) 36, places them under C. commune Linn. and C. moluccanum Blume.

CANARIUM HIRSUTUM Willd. Sp. Pl. 42 (1804) 760 (type!).

Boswellia hirsuta DC. Prodr. 2 (1825) 76 (type!). Pimela hirsuta Blume Mus. Bot. 1 (1850) 233 (type!). Canariopsis hirsuta Miq. Fl. Ind. Bat. 1 2 (1859) 653 (type!). Canarium odoriferum hirsutum Rumph. Herb. Amb. 2: 157, t. 51.

This is not represented in our Amboina collections. Canarium hirsutum Willd. and all of the synonyms cited above must be interpreted wholly from Rumphius, on whose description and figure all are based. The probabilities are that Canarium hispidum Blume will prove to be a synonym of it, but additional botanical material from Amboina will be necessary before the exact status of Canarium hirsutum Willd. can definitely be fixed.

CANARIUM ACUTIFOLIUM (DC.) comb. nov.

Marignia acutifolia DC. Prodr. 2 (1825) 79 (type!). Canarium nigrum Roxb. Fl. Ind. ed. 2, 3 (1832) 138. Pimela acutifolia Blume Mus. Bot. 1 (1850) 221, excl. syn. Zipp. Dammara nigra Rumph. Herb. Amb. 2: 160, t. 52.

Amboina, Mahija, Robinson Pl. Rumph. Amb. 377, October 3, 1913, in light forests, altitude about 300 meters, locally known as nanari.

Marignia acutifolia DC. was based entirely on the Rumphian reference cited above and must be interpreted from it and from Amboina material. After a careful study of the description as given by Rumphius, I am convinced that the specimen cited above, although with an abnormal fasciated inflorescence, represents the plant described and in all probability the one figured, although the figure is crude and unsatisfactory. It is very certain that Canarium rostratum Zipp., referred here by Blume, is not the plant described or figured by Rumphius, but represents a distinct species apparently very closely allied to Canarium oleosum (Lam.) Merr. (C. microcarpum Willd.). It is to be noted that Blume, in citing Rumphius under Pimela acutifolia, erroneously gives the reference as "Dammara nigra II. p. 160, t. 72," instead of Canarium nigrum Herb. Amb. 2: 160, t. 52, as it should be. Canarium nigrum Roxb., which is scarcely described by him, belongs here at least in part. It is not listed in Index Kewensis. He cites Dulcamara (sic!) nigra Rumph., Amb. II. 162. t. 52 and 53. as representing Canarium nigrum Roxb; but the two plates manifestly represent two distinct species, the latter being Canarium legitimum Blume (see p. 300).

CANARIUM OLEOSUM (Lam.) Engl. in Engl. & Prantl Nat. Pflanzenfam. 3 4 (1896) 241.

Amyris oleosa Lam. Encycl. 1 (1783) 362 (type!).

Canarium microcarpum Willd. Sp. Pl. 42 (1805) 760 (type!).

Nanarium minimum s. oleosum Rumph. Herb. Amb. 2: 162 (t. 54?).

AMBOINA, Mahija, Robinson Pl. Rumph. Amb. 376, October 3, 1913, in light forest at an altitude of 325 meters, locally known as nanari.

Amuris oleosa Lam, and Canarium microcarpum Willd, are both based solely on Rumphius, and strictly must be interpreted by the Rumphian description and figure; they are, therefore, exact synonyms, and the older name is here retained. reference of Nanarium oleosum Rumph, to Pimela oleosa Lour... Fl. Cochinch. (1790) 408, is a manifest error, as Loureiro's species was described from Cochin-China material that in all probability represents a species different from the Amboina one. Even though Loureiro cites the Rumphian name as a synonym and took his specific name from Rumphius, the reference to the Herbarium Amboinense should be excluded in interpreting his species. The present interpretation of Canarium oleosum (Lam.) Engl. follows the conventional interpretation of Canarium microcarpum Willd., and the Amboina specimen cited agrees closely with other botanical material from the Moluccas, so named, and with Rumphius's description: it does not, however. agree well with the figure given by Rumphius, which may indicate some mixture between the Rumphian figure and description. Canarium rostratum Zipp, should be critically compared with it.

CANARIUM SYLVESTRE Gaertn. Fruct. 2 (1791) 99, t. 102.

Canarium silvestre alterum Rumph. Herb. Amb. 2: 155, t. 49.

AMBOINA, Hoetoemoeri road, Robinson Pl. Rumph. Amb. 378, September 30, 1913, in forests, altitude 400 meters; Hitoe messen, Robinson Pl. Rumph. Amb. 379, October 14, 1913, in forests, altitude about 200 meters, locally known as dammara itam, nanari, nanari utan, and nanari puti daun alus.

The specimens agree closely with both the description and figure given by Rumphius, and undoubtedly represent his Canarium silvestre alterum. While there may be some doubt as to whether or not the fruit figured by Gaertner represents the exact form described by Rumphius, still it seems best to retain Gaertner's name in its accepted application, especially in view of the fact that he cites the Rumphian figure and description as representing his species. The citation of Rumphius under Canarium sylvestre Gaertn. has been followed by all authors except Loureiro, who places it, with doubt, under Pimela nigra

Lour., Fl. Cochinch. (1790) 407, where it certainly does not belong.

CANARIUM ZEPHYRINUM Blume Mus. Bot. 1 (1850) 217; Miq. Fl. Ind. Bat. 1 2 (1859) 643; March. in Baill. Adansonia 8 (1867-68) 53; Engl. in DC. Monog. Phan. 4 (1883) 149.

Canarium zephyrinum Rumph. Herb. Amb. 2: 151. t. 48.

This species is not represented in our Amboina collections, unless it be a form of *Canarium commune* Linn., which seems to be very probable. The figure is rather crude, but certainly represents a form very closely allied to *Canarium commune* Linn., where it has been referred by many authors, including Willdenow, Poiret, Schultes, and Don. *Canarium zephyrinum* Blume is a species of doubtful status and in the latest monograph of the family is placed under *Canarium* among the "species dubiae."

CANARIUM ZEYLANICUM (Retz.) Blume Mus. Bot. 1 (1850) 218.

Amyris zeylanica Retz. Obs. 4 (1786) 25.

Arbor zeylanica Rumph. Herb. Amb. 2: 153 (in Burm. obs.).

The reduction follows Blume, Mus. Bot. 1 (1850) 218, as this is undoubtedly the correct disposition of Rumphius's Arbor zeylanica.

CANARIUM PIMELA König in König & Sims Ann. Bot. 1 (1805) 361.

Pimela nigra Lour. Fl. Cochinch. (1790) 407.

Canarium nigrum Engl. in Engl. & Prantl Nat. Pflanzenfam. 3 4 (1896) 240, non Roxb.

Canarium sinense i Rumph. Herb. Amb. 2: 154?

The identity of *Canarium sinense I* of Rumphius with *Pimela nigra* Lour.=*Canarium pimela* König is entirely problematical as the description is inadequate. I merely follow Blume, Mus. Bot. 1 (1850) 220, in this reduction. Rumphius's material was from China.

CANARIUM ALBUM (Lour.) Räusch ex DC. Prodr. 2 (1825) 80.

Pimela alba Lour. Fl. Cochinch. (1790) 408.

Canarium sinense II Rumph Herb. Amb. 2: 154.

The identity of Canarium sinense II with Pimela alba Lour. is more or less problematical, although Loureiro in the original publication of the species cites Rumphius, and the native names given by Rumphius agree with those cited by Loureiro. Rumphius's material was from China, not from Amboina. Engler, in DC. Monog. Phan. 4 (1883) 149, places Canarium album under the "species dubiae." *

^{*} See Guillaumin, in Lecomte Fl. Gén. Indo-Chine 1 (1911) 714, who gives a full description and a figure of this species.

PIMELA CARYOPHYLLACEA Blume Mus. Bot. 2 (1850) 222.

Canarium sinense III Rumph. Herb. Amb. 2: 154 (type!).

Based originally on Chinese material by Rumphius. *Pimela caryophyllacea* Blume is based wholly on Rumphius's very brief description, and all that can be said regarding it is that it is probably a species of *Canarium*.

CANARIOPSIS PAUCIJUGA Miq. Fl. Ind. Bat. 1 ² (1859) 653 (type!).

Pimela paucijuga Blume Mus. Bot. 1 (1850) 226 (type!).

Canarium odoriferum leve var. Rumph. Herb. Amb. 2: 156.

A species of entirely doubtful status, based wholly on the Rumphian description and to be interpreted solely by it. All that can be definitely stated regarding it is that it is a species of *Canarium*. Its further determination must await additional botanical material from Amboina.

GARUGA Roxburgh

GARUGA ABILO (Blanco) Merr. in Govt. Lab. Publ. (Philip.) 35 (1905) 73.

Guiacum abilo Blanco Fl. Filip. (1837) 364.

Garuga mollis Turcz. in Bull. Soc. Nat. Mosc. 31 1 (1858) 475.

Capraria Rumph. Herb. Amb. 2: 139?

Capraria Rumph. is here tentatively referred to Garuga abilo Merr. The description applies closely, although Rumphius does not describe the flowers or the fruits. The only previously suggested reduction is Teysmann's opinion, quoted by Hasskarl, Neue Schlüssel (1866) 35, that Capraria might belong in the Sapindaceae.

PROTIUM Burman f.

PROTIUM JAVANICUM Burm. f. Fl. Ind. (1768) 88.

Amyris protium Linn. Mant. 1 (1767) 65. Tingulong Rumph. Herb. Amb. 7: 54, t. 23, f. 1.

This reduction, manifestly the correct disposition of *Tingulong*, was made by Burman f. in the original description of *Protium javanicum* Burm. f.

MELIACEAE

TOONA Roemer

TOONA SURENI (Blume) comb. nov.

Swietenia sureni Blume Cat. Gew. Buitenz. (1823) 72. Cedrela febrifuga Blume Bijdr. (1825) 180. Surenus febrifuga O. Kuntze Rev. Gen. Pl. 1 (1891) 111. Surenus Rumph. Herb. Amb. 3: 66, t. 39.

This is not represented in our Amboina collections. The illustration is unmistakably that of *Cedrela*, or *Toona* as the

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Indo-Malayan representatives of the group are called by some botanists. More than one species may be included in the description, Hasskarl, Neue Schlüssel (1866) 51, definitely stating that three are represented; namely, Cedrela toona Roxb., C. febrifuga Blume, and C. inodora Hassk. Roxburgh was the first botanist to recognize the approximate position of Surenus and reduced it to Cedrela toona Roxb., in Fl. Ind. ed. 2, 1 (1832) 635. The typical form of Roxburgh's species is confined to India, but a few varieties occur in the Malay Archipelago and in Australia.* Surenus alba Rumph., Herb. Amb. 3: 126, is considered by Hasskarl, Neue Schlüssel (1866) 51, to represent Cedrela inodora Hassk., which species C. de Candolle treats as a variety of Cedrela febrifuga Blume; Cedrela febrifuga Blume var. inodora (Hassk.) C. DC., Records Bot. Surv. Ind. 3 (1908) 373. Hasskarl also refers to Cedrela febrifuga Blume the form described by Rumphius as Surenus rubra Rumph., Herb. Amb. 3: 126, which is probably the correct disposition of it. oldest specific name, that supplied by Swietenia sureni Blume, is here adopted.

XYLOCARPUS Koenig

XYLOCARPUS GRANATUM Koen, in Naturf. 20 (1784) 2.

Carapa obovata Blume Bijdr. (1825) 179.

Xylocarpus obovatus Juss. Mém. Mus. Paris 19 (1830) 244.

Carapa indica Juss. in Dict. Sci. Nat. 7: 31.

Carapa moluccensis Lam. Encycl. 1 (1785) 621 p. p., quoad Rumph. t. 61, excl. descr.

Monosoma littorata Griff. Notul. 4 (1854) 502.

Granatum litoreum III parvifolium Rumph. Herb. Amb. 3: 93, t. 61.

This species is not represented in our Amboina collections. The description, but to a less degree the figure, given by Rumphius is clearly Xylocarpus (Carapa) obovatus Juss., as currently interpreted, but Xylocarpus obovatus Juss. is apparently identical with the earlier Xylocarpus granatum Koen. In Rumphius's description the shape of the leaves, rounded at the apex, and the size of the fruits, indicated as larger than those of Granatum litoreum I latifolium, are the determining points.

The synonymy between Xylocarpus granatum Koen. (X. obovatus Juss.) and X. moluccensis Lam. as interpreted below, is curiously confused. C. de Candolle † recognizes the two species Carapa obovata Blume and Carapa moluccensis Lam., but erroneously reduced Xylocarpus granatum Koen. to Carapa

^{*} See C. de Candolle, Records Bot. Survey India 3 (1908) 346.

[†] Monog. Phan. 1 (1878) 718, 719.

moluccensis Lam. Hiern * erred in referring both to a single species, Carapa moluccensis Lam. The type of Koenig's species was from the Tranquebar coast, India, and his description applies unmistakably to the form with obovate leaves and large fruits; that is, the species that grows in the mangrove swamps: "folia oblongo-clavata, rotundata;" "Habitat in silvis rhizophoreis." Lamarck, in the original description of Carapa moluccensis, which was based wholly on "Granatum litoreum s. Martahul Rumph. Amb. 3. p. 92. Tab. 61," confused the two forms; the plate reference is to Xylocarpus granatum Koenig, but the description that he compiled was from Granatum litoreum I latifolium Rumph. as indicated by the page reference and his description. He disposed of t. 62 of the Herbarium Amboinense, to which his description wholly applies, thus: "Variat foliis acutioribus. Ibidem t. 62." The two species are very strongly marked. Xulocarpus granatum Koen, grows in the mangrove swamps and has oblong to obovate leaflets, very large fruits, and a smooth, rather thin bark. Xylocarpus moluccensis Lam. grows on the open coasts and has usually ovate. acute leaflets; much smaller fruits than X. granatum Koen.; and a thick, very flaky bark.

XYLOCARPUS MOLUCCENSIS (Lam.) M. Roem. Syn. Hesper. (1846) 124 (type!).

Carapa moluccensis Lam. Encycl. 1 (1785) 621, quoad descr., excl. Rumph. t. 61 (type!); C. DC. Monog. Phan. 1 (1878) 719, excl. syn. Koenig et Willdenow.

Carapa rumphii Kostel. Allg. Med.-Pharm. Fl. 5 (1836) 1988 (type!).
Xylocarpus carnulosus Zoll. & Mor. Nat. Geneesk. Arch. Neerl. Ind.
2 (1845) 582, ex descr.

Xylocarpus forstenii Miq. Ann. Mus. Bot. Lugd. Bat. 4 (1868) 62, ex descr.

Granatum litoreum I latifollum Rumph. Herb. Amb. 3: 92, t. 62. Granatum litoreum III latissimum Rumph. Herb. Amb. 3: 92.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 491, September 19, 1913, along the seashore.

Lamarck, as noted above, in proposing the binomial Carapa moluccensis, based his description on Granatum litoreum I latifolium, but erroneously referred to his species t. 61 of the Herbarium Amboinense, which is Xylocarpus granatum Koenig. His species, manifestly, should be interpreted by the form described, rather than by the figure that he erroneously referred to it. The rather confused synonymy between Xylocarpus granatum Koenig and X. moluccensis M. Roem., is here discussed

^{*} Hooker f. Fl. Brit. Ind. 1 (1875) 567.

under the former. The Rumphian illustration, t. 62, is the type and whole basis of Carapa rumphii Kostel. Xylocarpus carnulosus Zoll. & Mor., type from eastern Java, and X. forstenii Miq., type from Celebes, appear to be synonymous with Xylocarpus moluccensis M. Roem.

SANDORICUM Cavanilles

SANDORICUM KOETJAPE (Burm. f.) Merr. in Philip. Journ. Sci. 7 (1912) Bot. 237.

Melia koetjape Burm. f. Fl. Ind. (1768) 101. Trichilia nervosa Vahl Symb. 1 (1790) 31.

Sandoricum indicum Cav. Diss. 4 (1787) 359, t. 202, 203.

Sandoricum domesticum Rumph. Herb. Amb. 1: 167, t. 64.

Amboina, Robinson Pl. Rumph. Amb. 488, July 30, 1913, near the town of Amboina.

The generic name Sandoricum was apparently taken from Rumphius, and the form figured and described by him has been consistently referred to Sandoricum indicum Cav., manifestly a synonym of Melia koetjape Burm. f. Burman's specific name, being much the older, has been previously adopted by me, and under our rules of nomenclature it must be maintained. The forms briefly described by Rumphius as Sandoricum silvestre and Sandoricum Cajim Gulur are undoubtedly referable to Sandoricum koetjape Merr., the former the spontaneous form with acid fruits, the latter with rather large, sweet fruits. Like most cultivated fruit trees, considerable variation is found in the characters of the fruit of the santol.

DYSOXYLUM Blume

DYSOXYLUM EUPHLEBIUM Merr. in Philip. Journ. Sci. 9 (1914) Bot. 305.

Alliaria Rumph. Herb. Amb. 2: 81, t. 20.

AMBOINA, Hitoe messen, Robinson Pl. Rumph. Amb. 489, November 6, 1913, in forests, altitude about 150 meters.

This specimen certainly represents Alliaria Rumph., of which Rumphius figured a fruiting specimen. It is also apparently identical with the Philippine Dysoxylum euphlebium Merr., as a careful comparison between the specimen and the type of the latter species shows no essential differential characters. It is not Dysoxylum alliaceum Blume, which was described from Javan specimens. It was referred to Dysoxylum alliaceum Blume, Bijdr. (1825) 172, which disposition of it was accepted by Henschel, Walpers, Dietrich, and Miquel. Hamilton, Mem. Wern. Soc. 6 (1832) 305, placed it under Guarea alliaria Ham.,

the actual type of which, however, was a Bengal plant that is *Dysoxylum hamiltonii* Hiern. Hasskarl, Cat. Hort. Bot. Bogor. (1844) 221, erroneously reduced it to *Hartighsea forsteri* Juss.=*Dysoxylum forsteri* C. DC., a species of Australia and Polynesia; while Roemer, Hesper. (1844) 101, placed it under *Prasoxylum alliaceum* Roem., presumably a synonym of *Dysoxylum alliaceum* Blume, of Java and Sumatra.

DYSOXYLUM sp.

Arbor nussalavica Rumph. Herb. Amb. 7: 14, t. 8, f. 2.

Manifestly this is a species of *Dysoxylum*, and one that should be readily recognized when once collected. Hamilton thought it was referable to the genus *Guarea*, and Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 186, thought it was referable to *Epicharis*=*Dysoxylum* Blume.

DYSOXYLUM sp.

Arbor sebi Rumph. Herb. Amb. 7: 7.

The plant described was from Java, there known as cadoja. This name is still applied to two or more species of Dysoxylum in Java, so that $Arbor\ sebi$ is probably referable to this genus.

LANSIUM (Rumphius) Correa

LANSIUM DOMESTICUM Correa in Ann. Mus. Hist. Nat. Paris 10 (1807) 157, t. 10. f. 1; Poir. in Lam. Encycl. Suppl. 3 (1813) 299; Jack in Trans. Linn. Soc. 14 (1823) 115, t. 4.

Lansium Rumph. Herb. Amb. 1: 151, t. 54.

This common and well-known Malayan fruit tree is not represented in our Amboina collections. Lansium was originally reduced, with doubt, to Averrhoa acida Linn. by Linnaeus, Amoen. Acad. 4 (1759) 119, in which he was followed by a few authors. Correa, Jack, Poiret, and recent authors generally, have referred it to Lansium domesticum, the correct disposition of it. The generic name Lansium is taken from Rumphius, and by some authors Rumphius is quoted as its author. The tree is commonly cultivated in most parts of the Malayan region, but like many other cultivated plants, it is poorly represented in herbaria.

AGLAIA Loureiro

AGLAIA ODORATA Lour. Fl. Cochinch. (1790) 173.

Camunium sinense Rumph. Herb. Amb. 5: 26, t. 18, f. 1. Tsjiulang Rumph. Herb. Amb. 7: 38.

This commonly cultivated ornamental tree is not represented in our Amboina collections, but the figure cited and both of the

descriptions apply unmistakably to this well-marked species. Camunium sinense Rumph. was cited by Loureiro as a synonym of Aglaia odorata Lour. in the original description of that species, in which reduction he has been followed by practically all authors, as it is manifestly the correct disposition of it. Vitex pinnata Linn., Sp. Pl. (1753) 638, is cited in Index Kewensis as a synonym of Aglaia odorata Lour., but it is not clear on what grounds. It is based wholly on Pistacio-vitex Linn., Fl. Zeyl. No. 415, the description of which is clearly a Vitex, certainly no meliaceous plant. Trimen, Fl. Ceyl. 3 (1895) 358, after examining Hermann's specimen, considers it to be a variety of Vitex altissima Linn. f. Druce, Bot. Exch. Club (1914) 413, has erroneously transferred Vitex pinnata Linn. to Aglaia as A. pinnata (Linn.) Druce, as the equivalent of Aglaia odorata Tsjiulang, as described by Rumphius in the Auctuarium is clearly the same as Camunium sinense Rumph., the common name of the latter being also tsjiulang. Hasskarl, Neue Schlüssel (1866) 190, thought that it might be Aglaia odorata Lour. or Aglaia odoratissima Blume.

AGLAIA SILVESTRIS (Roem.) comb. nov. § Euaglaia.

Lansium silvestre Roem. Hesper. (1846) 99, ex Hassk. Neue Schlüssel (1866) 20 (type!).

Lansium silvestre Rumph. Herb. Amb. 1: 153, t. 55.

AMBOINA, Hitoe lama, $Robinson\ Pl.\ Rumph.\ Amb.\ 490,$ October 11, 1913, in forests, altitude about 150 meters.

Arbor circiter 16 m alta, ramulis et petiolis et inflorescentiis dense uniformiter cupreo- vel brunneo-lepidotis; foliis circiter 30 cm longis, foliolis circiter 12, suboppositis, oblongis, tenuiter acuminatis, vetustioribus utrinque glabris, usque ad 13 cm longis; paniculis 20 ad 25 cm longis, anguste pyramidatis, multifloris; floribus 5-meris, breviter pedicellatis, in ramulis ultimis racemose dispositis, calycis profunde obtuse 5-dentatis; tubo subellipsoideo, glabro, libero.

A tree about 16 m high, the branchlets, petioles and rachis, and inflorescence densely and uniformly cupreous- or brownish-lepidote, the indumentum, however, not at all stellate-hairy. Leaves alternate, about 30 cm long, 6- or 7-jugate; leaflets firmly chartaceous to subcoriaceous, subopposite, oblong, 8 to 13 cm long, 3 to 3.8 cm wide, rather pale when dry, shining, base acute to somewhat rounded, sometimes slightly inequilateral, apex slenderly long-acuminate, the acumen 1 to 1.5 cm long, the lower surface browner than the upper, at maturity wholly glabrous; lateral nerves about 14 on each side of the midrib; petiolules 2 to 4 mm long. Panicles terminal and in

the upper axils, narrowly pyramidal. 20 to 25 cm long, their peduncles 4 to 6 cm long, the lower branches spreading, 4 to 6 cm long, the upper shorter. Flowers numerous, racemosely arranged on the ultimate branchlets, their pedicels 1 mm long or less, and with the calyces more or less lepidote. Calyx about 1.4 mm long, prominently 5-toothed, the teeth rounded or obtuse, 0.6 mm long. Petals 5, free, glabrous, oblong to elliptic-oblong, 2.7 mm long, rounded. Staminal-tube free, glabrous, subellipsoid, contracted at the apex, the orifice small, round. Stamens 5, the anthers attached near the base of the tube, about 1 mm long.

Aglaia silvestris Merr., typified by the specimen cited above, is certainly the form described and figured by Rumphius as Lansium silvestre, the exact status of which has not been previously determined. Loureiro, Fl. Cochinch. (1790) 272, placed it under Quinaria lansium Lour.=Clausena punctata (Retz.) W. & A., a species that has little in common with the form Rumphius described. It was later referred by de Candolle, Prodr. 1 (1824) 537, to Cookia punctata Retz., by reduction of Quinaria lansium Lour. Lansium silvestre Roem., Hesper. (1846) 99, is apparently merely a repetition of Rumphius's name. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 20, correctly placed it in the genus Aglaia.

Its alliance is with Aglaia perviridis Hiern and Aglaia laxiflora Miq., but it does not appear to be any of the numerous described forms and has been accordingly redescribed here as a new species. It is apparently the form described by Miquel as Aglaia ganggo Miq. forma amboinensis Miq., in Ann. Mus. Bot. Lugd.-Bat. 4 (1868) 47, but I consider it to be specifically distinct from Aglaia ganggo Miq., of which I have a series of excellent specimens.

AGLAIA sp.

Lansium montanum Rumph. Herb. Amb. 1: 154, t. 56.

Probably an *Aglaia*, and one that should very readily be recognized when once collected, as Rumphius's figure presents a very characteristic species. Jack, Trans. Linn. Soc. 14 (1823) 118, considered that it closely resembled his *Milnea montana*, of Sumatra=Aglaia; and Roemer, Hesper. (1846) 99, placed it under *Selbya montana* Roem., perhaps based on Rumphius's *Lansium montanum*, perhaps based on *Milnea montana* Jack (original publication not seen by me). Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 20, considers it to be a species of *Aglaia*, which is probably the correct disposition of it, although

it might possibly be a small-flowered species of *Dysoxylum*. In the plate the fruits are drawn entirely out of proportion to the leaves according to the measurements given by Rumphius.

MELIACEAE OF UNCERTAIN STATUS

Vidoricum silvestre Rumph. Herb. Amb. 1: 173, t. 67.

This disposition of *Vidoricum silvestre* is suggested chiefly because the seeds, as figured by Rumphius, almost certainly pertain to some meliaceous plant. The description of the species is indefinite, and from it alone no rational idea of the plant can be obtained.

DICHAPETALACEAE

DICHAPETALUM Thouars

DICHAPETALUM MOLUCCANUM sp. nov.

Funis butonicus minor Rumph. Herb. Amb. 5: 77, t. 41, f. 2.

Amboina, Waë, Robinson Pl. Rumph. Amb. 602 (type), November 26, 1913, in light forests, altitude about 20 meters.

Frutex scandens, ut videtur dioicus, ramulis junioribus inflorescentiisque leviter cinereo-pubescentibus, foliis subtus ad costa nervisque plus minusve ciliato-hirsutis; foliis oblongis, chartaceis, usque ad 16 cm longis, integris, utrinque subaequaliter angustatis, basi acutis, apice breviter acuminatis, nervis utrinque circiter 7, subtus prominentibus, in siccitate nigrescentibus; cymis axillaribus, solitariis, pedunculatis, usque ad 2 cm longis, laxis, paucifloris; floribus & 5-meris, circiter 3 mm diametro, sepalis extus parce pubescentibus, petalis oblongis, truncatis, vix retusis, glabris, glandulis pubescentibus.

A scandent shrub. Branches terete, glabrous, brownish or somewhat reddish-brown, lenticellate, the branchlets similar in color, slightly pubescent with pale, scattered, usually appressed hairs. Leaves chartaceous, oblong, 11 to 16 cm long, 4 to 6 cm wide, entire, subequally narrowed to the acute, equilateral, or rarely slightly inequilateral base, and to the distinctly but rather shortly blunt-acuminate apex, brown or olivaceousbrown when dry, the upper surface shining, quite glabrous, the lower surface of nearly the same color, ciliate-hirsute with scattered, spreading, pale hairs on the midrib, and to a less extent on the primary nerves, reticulations, and sometimes even the margins: lateral nerves about 7 on each side of the midrib, prominent, curved, blackish when dry, faintly anastomosing, the reticulations distinct; petioles about 4 mm long, sparingly grayish-pubescent, ultimately glabrous. Cymes axillary, solitary, slightly grayish-pubescent with short appressed hairs,

peduncled, about 2 cm long and wide, dichotomous, rather lax, few-flowered, the peduncle about as long as or slightly exceeding the petiole. Male flowers pale yellow, about 3 mm in diameter, their pedicels pubescent, 1 to 2 mm long, the bracteoles very small. Calyx about 2 mm long, externally cinereous-pubescent with short, appressed hairs, the lobes 5, oblong-ovate, obtuse, about 1.5 mm long. Petals glabrous, oblong, apex rounded-subtruncate, entire or very obscurely notched, not retuse or split, nearly 1.5 mm long. Stamens 5, about 1.5 mm long, glabrous. Glands densely pubescent, small. Pistillate or perfect flowers not seen.

This species is apparently closely allied to *Dichapetalum timo-riense* (DC.) Engl., from which it is distinguished by certain floral characters, the flowers dioecious (or polygamous?), the glands densely pubescent, not glabrous. It seems to be even more closely allied to *Dichapetalum papuanum* (Becc.) Engl., of New Guinea, but has rather smaller, differently shaped leaves, while the petals are truncate and entire, rarely minutely notched, not at all bifid at the apex.

Rumphius's description and figure agree sufficiently well with the specimen cited above to warrant the reduction of *Funis butonicus minor* to *Dichapetalum moluccanum* Merr. The only previously suggested reductions are Burman's opinion that it represented some species in the *Contortae* and Lamarck's opinion that it was near *Menispermum*.

EUPHORBIACEAE

PHYLLANTHUS Linnaeus

PHYLLANTHUS NIRURI Linn. Sp. Pl. (1753) 981.

Herba moeroris I alba Rumph. Herb. Amb. 6: 41, t. 17, f. 1.

Amboina, Batoe merah, Robinson Pl. Rumph. Amb. 350, July 20, 1913, in ditches at low altitudes.

This reduction was made by Linnaeus, in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 1264, Sp. Pl. ed. 2 (1763) 1392, has been accepted by all authors who have had occasion to cite the Rumphian figure, and is certainly the correct disposition of *Herba moeroris I alba*.

PHYLLANTHUS URINARIA Linn. Sp. Pl. (1753) 982.

Herba moeroris II rubra Rumph. Herb. Amb. 6: 42, t. 17, f. 2.

AMBOINA, Hatiwe ketsjil, Robinson Pl. Rumph. Amb. 351, July 20, 1913, on coral limestone at low altitudes.

This reduction was made by Linnaeus in the same publications as those in which *Herba moeroris I alba* was reduced to Phyllanthus niruri Linn., has been accepted by all authors, and is certainly the correct disposition of it.

PHYLLANTHUS EMBLICA Linn. Sp. Pl. (1753) 982.

Mirobalanus embilica Rumph. Herb. Amb. 7: 1, t. 1.

This species is not represented in our Amboina collections. The reduction was first made by Linnaeus, in Amoen. Acad. 4 (1759) 136, Syst. ed. 10 (1759) 1265, Sp. Pl. ed. 2 (1763) 1393, which is certainly the correct disposition of it. Rumphius notes that it was an introduced plant in Amboina.

CICCA Linnaeus

CICCA ACIDA (Linn.) comb. nov.

Averrhoa acida Linn. Sp. Pl. (1753) 428.

Cicca disticha Linn. Mant. 1 (1767) 124.

Cicca nodiflora Lam. Encycl. 2 (1786) 1.

Phyllanthus distichus Muell.-Arg. in DC. Prodr. 15² (1866) 413.

Phyllanthus cicca Muell.-Arg. in Linnaea 32 (1863) 90.

Cicca acidissima Blanco Fl. Filip. (1837) 700.

Phyllanthus acidissimus Muell.-Arg. in Linnaea 32 (1865) 50.

Phyllanthus cheramela Roxb. Hort. Beng. (1814) 104.

Phyllanthus acidus Skeels in U. S. Dept. Agr. Bur. Pl. Ind. Bull. 148 (1909) 17.

Cheramela Rumph. Herb. Amb. 7: 34, t. 17, f. 2.

This widely cultivated tree is not represented in our Amboina collections. The reduction of *Cheramela* Rumph. to *Averrhoa acida* Linn. was first made by Linnaeus, Amoen. Acad. 4 (1759) 136, Sp. Pl. ed. 2 (1762) 613, in which he was followed by Burman f. and Lamarck. Willdenow, followed by numerous other authors, referred it to *Cicca disticha* Linn. Miquel, Fl. Ind. Bat. 1 ² (1859) 372, referred it to *Cicca nodiflora* Lam., while Henschel and Pritzel referred it to *Phyllanthus cheramela* Roxb. All of these names are synonyms of *Cicca acida* (Linn.) Merr., *Averrhoa acida* Linn. being a synonym of *Cicca disticha* Linn. (*Phyllanthus distichus* Muell.-Arg.), but much earlier. I prefer to follow Robinson * in retaining *Cicca* as a genus distinct from *Phyllanthus*.

BREYNIA Forster

BREYNIA CERNUA (Poir.) Muell.-Arg. in DC. Prodr. 15 ² (1866) 439.

Phyllanthus cernuus Poir. in Lam. Encycl. 5 (1804) 298.

Melanthesa cernua Decne. in Nuov. Ann. Mus. Paris 3 (1834) 483. Aalius parvifolia Rumph. Herb. Amb. 3: 207.

Amboina, Batoe gadjah and Negri lama, Robinson Pl. Rumph. Amb. 499, 339, August 5 and October 8, 1913, in light forests, altitude 175 to 250 meters, locally known as $kartu\ utan$.

^{*} Philip. Journ. Sci. 4 (1909) Bot. 87.

The description is that of a *Breynia* in all respects, and undoubtedly *Aalius parvifolia* Rumph. is the same as *Breynia cernua* Muell.-Arg. The red, accrescent calyx is very characteristic. The only other suggested reduction of Rumphius's species is Hasskarl's, Neue Schlüssel (1866) 67, reference of it to *Sauropus albicans* Blume, which is certainly incorrect.

Aalius latifolia Rumph., Herb. Amb. 3:207, very briefly described, is compared with *Aalius parvifolia*, having leaves two to three times as long as the latter. Hasskarl, Neue Schlüssel (1866) 67, surmises that it may be a *Glochidion*. Its status is quite indeterminable from the data given by Rumphius.

BACCAUREA Loureiro

BACCAUREA NANIHUA sp. nov.

Nani hua Rumph. Herb. Amb. 3: 21, t. 9.

AMBOINA Koesoekoesoe sereh and Mahija, Robinson Pl. Rumph. Amb. 331 (type), 330, October 3 and August 7, 1913, in light forest, altitude about 250 meters, locally known as haharu and as makarlasi.

Arbor circiter 15 m alta, inflorescentiis dense ferrugineo-pubescentibus; foliis oblongo-ovatis, coriaceis, glabris, in siccitate brunneis, usque ad 16 cm longis, integris, basi rotundatis, apice obtusis ad latissime obtuseque acuminatis, nervis utrinque circiter 9, subtus valde prominentibus; racemis solitariis vel binis, 3 ad 5 cm longis, e ramis infra foliis, paucifloris, omnibus partibus dense ferrugineo-pubescentibus, sepalis oblongis, circiter 3 mm longis; fructibus depresso-globosis, 2 ad 2.3 cm diametro, extus ferrugineo-pubescentibus vetustioribus glabrescentibus, brunneis, pericarpio crassissimo.

A tree about 15 m high, the very young branchlets and petioles slightly pubescent, the inflorescence densely ferruginous-pubescent, otherwise glabrous. Branches and branchlets brown or reddish-brown, terete. Leaves coriaceous, brown and somewhat shining when dry, oblong-ovate, entire, 11 to 16 cm long, 5 to 8 cm wide, base rounded, narrowed upward to the obtuse or very broadly blunt-acuminate apex, the lower surface paler than the upper; lateral nerves about 9 on each side of the midrib, very prominent on the lower surface, curved-anastomosing, the reticulations distinct; petioles 2.5 to 3.5 cm long. Pistillate racemes solitary or in pairs, from the branches below the leaves. few-flowered, 3 to 5 cm long, simple, all parts densely ferruginous-pubescent. Pedicels about 4 mm long, jointed at about the middle, here supplied with a single, broadly ovate, 1.5 mm long bracteole. Sepals 5, oblong to oblong-ovate, subequal, subacute or obtuse, about 3 mm long, densely pubescent on both surfaces. Ovary ovoid, densely pubescent. Fruits brown when dry, depressed-globose, 2 to 2.5 cm in diameter, normally 3-celled, in cross-section with three very broadly rounded angles, more or less ferruginous-pubescent, in age becoming nearly glabrous, the pericarp very thick, inside reddish-brown when dry, somewhat spongy in texture.

Nani hua Rumph. was reduced by Loureiro to Baccaurea ramiflora Lour., Fl. Cochinch. (1790) 661, the type of the genus, but Baccaurea ramiflora Lour. was actually described from specimens taken from cultivated trees in Cochin-China and is not the same as the Amboina Nani hua of Rumphius. Henschel, Poiret, and Pritzel accepted Loureiro's reduction of Nani hua. DeVriese and Poiret, in Lam. Encycl. 4 (1798) 419, thought that it might be a species of Eugenia, while Hasskarl, Neue Schlüssel (1866) 47, quotes Teysmann's opinion that it might belong in the Myrtaceae.

Baccaurea nanihua Merr. closely resembles Baccaurea philippinensis Merr. and Baccaurea bracteata Muell.-Arg. and manifestly belongs in the same group as these two species. It is readily distinguished from both, however, by its more numerously nerved leaves.

ANTIDESMA Burman

ANTIDESMA BUNIUS (Linn.) Spreng. Syst. 1 (1825) 826.

Stilago bunius Linn. Mant. 1 (1767) 122.

Antidesma rumphii Tul. in Ann. Sci. Nat. III 15 (1851) 238 (type).

Bunius sativa s. domestica Rumph. Herb. Amb. 3: 204, t. 131. Bunius agrestis Rumph. Herb. Amb. 3: 205, t. 131, f. A.

AMBOINA, $Robinson\ Pl.\ Rumph.\ Amb.\ 334$, September 13, 1913, from cultivated trees in the town of Amboina, locally known as $kuti\ kata$ and $kata\ kuti$.

Bunius sativus Rumph. (B. domestica Rumph.) was reduced by Linnaeus to Stilago bunius Linn. in the original description of that species, which, as Antidesma bunius (Linn.) Spreng., is certainly the correct disposition of it. Antidesma rumphii Tul. was based wholly on Bunius agrestis Rumph., which seems to me to be merely the spontaneous or subspontaneous form of Antidesma bunius Spreng.; I have accordingly here reduced Antidesma rumphii Tul. to Antidesma bunius (Linn.) Spreng.

ANTIDESMA STIPULARE Blume Bijdr. (1826) 1125.

Antidesma amboinense Miq. Ann. Mus. Bot. Lugd. Bat. 1 (1864) 218. Arbor nuda Rumph. Herb. Amb. 3: 89, t. 59.

Amboina, Lateri, Batoe merah River, and vicinity of the town of Amboina, Robinson Pl. Rumph. Amb. 355, 356, August, September, and October, 1913, in light woods, altitude 40 to 150 meters, locally known as kata kuti kam-

bing; probably referable here also is Rel. Robins. 1709, from Hitoe messen, Amboina, November 6, 1913, in forests, altitude about 150 meters, with smaller, narrower stipules and apparently more fleshy, slightly larger fruits than the other specimens.

The Amboina specimens, typical Antidesma amboinense Miq., differ from material of Antidesma stipulare Blume from Nusa Kambangan, the type locality of Blume's species, and from Java in some details, notably in their larger, differently shaped stipules, but I have followed J. Mueller in the reduction of Antidesma amboinense Miq. to Antidesma stipulare Blume. Arbor nuda Rumph. was reduced to the genus Antidesma by Teysmann, as quoted by Hasskarl, Neue Schlüssel (1866) 54.

The details of the figure are not good, the leaves being represented as with but 5 to 8 pairs of nerves, while in the Amboina specimens there are usually about 15 pairs of nerves, and the characteristic stipules are not shown at all. However, these are indicated in the description thus: "folia * * * suprema vero prope suum ortum unum alterumve gerunt foliorum seu squamulas." In spite of the discrepancies between the figure and the specimens cited above, I am confident that Arbor nuda Rumph. is here correctly interpreted, although some future monographer may prefer to reinstate Miquel's Antidesma amboinense as a species distinct from the Javan Antidesma stipulare Blume.

CROTON Linnaeus

CROTON TIGLIUM Linn. Sp. Pl. (1753) 1004.

Tiglium officinale Klotz, in Nov. Act. Acad. Nat. Cur. 19 (1843) Suppl. 1: 418.

Granum moluccanum Rumph. Herb. Amb. 4: 98, t. 42.

This is not represented in our Amboina collections. The reduction of *Granum moluccanum* to *Croton tiglium* was first made by Linnaeus, in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1275, Sp. Pl. ed. 2 (1763) 1426, which is the correct disposition of it, and which has been accepted by all authors.

MICROCOCCA Bentham

MICROCOCCA MERCURIALIS (Linn.) Benth. in Hook. Niger Fl. (1849) 503.

Tragia mercurialis Linn. Sp. Pl. (1753) 980. Urtica mortua Rumph. Herb. Amb. 6: 49, t. 20, f. 2?

Nothing resembling this species is represented in our Amboina collections. The reduction was first made by Linnaeus, in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, Syst.

ed. 10 (1759) 1264, which, as *Micrococca mercurialis* Benth., is possibly the correct disposition of it. The species, however, is not known from the Moluccas. Pax and K. Hoffmann, in Engl. Pflanzenreich 63 (1914) 133, give its range as tropical Asia and Africa, extending to the southeast only as far as Malacca.

MALLOTUS Loureiro

MALLOTUS TILLIFOLIUS (Blume) Muell.-Arg. in Linnaea 34 (1865) 190.

Rottlera tiliifolia Blume Bijdr. (1825) 607.

Halecus litorea Rumph. Herb. Amb. 3: 196, t. 126.

Amboina, Robinson Pl. Rumph. Amb. 367, 368, August 8, 1913, along the seashore near the town of Amboina, locally known as baru laut.

Halecus litorea Rumph. was originally reduced by Linnaeus to Croton aromaticus Linn., in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 125, in which entirely erroneous reduction he was followed by Loureiro, Murray, Willdenow, Persoon, Henschel, and Miquel. Lamarck, Encycl. 2 (1786) 206, cites it under Croton tiliifolius Lam. var. aromaticus Lam., the type of the species being a specimen from Mauritius, the variety being merely a reduction of Croton aromaticus Linn. Teysmann's reduction of it to Schmidelia, as quoted by Hasskarl, Neue Schlüssel (1866) 66, is entirely wrong and was probably due to some error in transcribing Teysmann's notes.

MELANOLEPIS Reichenbach f. and Zollinger

MELANOLEPIS MULTIGLANDULOSA (Reinw.) Reichb. f. & Zoll. in Linnaea 28 (1856) 324.

Croton multiglandulosus Reinw. ex Blume Cat. Gew. Buitenz. (1823) 105.

Rottlera multiglandulosa Blume Bijdr. (1825) 609.

Melanolepis calcosa Mig. Fl. Ind. Bat. 1 2 (1859) 399.

Mallotus moluccanus Muell.-Arg. in Linnaea 34 (1863) 185, non Croton moluccanus Linn.

Melanolepis moluccana Pax & K. Hoffm. in Engl. Pflanzenreich 63 (1914) 142, non Croton moluccanus Linn.

Folium calcosum Rumph. Herb. Amb. 4: 129, t. 64.

Folium calcosum II Rumph. Herb. Amb. 4: 130.

Amboina, Hitoe messen and Ayer putri, Robinson Pl. Rumph. Amb. 359, 360, August and October, 1913, on forested limestone hills and along road-sides, altitude 5 to 150 meters, locally known as kayu kapor.

Folium calcosum Rumph. was reduced by Roxburgh, Fl. Ind. ed. 2, 3 (1832) 690, to Ricinus dicoccus Roxb., the description being based on specimens originating in Amboina and cultivated in the botanic garden at Calcutta; it is a synonym of Melanolepis multiglandulosa Reichb. f. & Zoll. Miquel, Fl. Ind. Bat. 12 (1859) 399, reduced Ricinus dicoccus Roxb. together with

Folium calcosum Rumph. to Melanolepis calcosa Miq., which is also a synonym of Melanolepis multiglandulosa Reichb. f. & Zoll. Hasskarl, Neue Schlüssel (1866) 85, reduced Folium calcosum II to Melanolepis multiglandulosa Reichb. f. & Zoll.

In regard to the proper specific name for this widely distributed and well-known species, I cannot follow J. Mueller in calling it Mallotus moluccanus Muell.-Arg. or Pax and K. Hoffmann in calling it Melanolepis moluccana Pax & K. Hoffm., for the reason that nothing in the Linnean description of Croton moluccanus Linn., the name-bringing synonym, applies to this species. It was based on two references; the first, Fl. Zeyl. 346, and the second. Nux juglans moluccana bifida Burm. Fl. Zevl. 170. The first reference, Fl. Zeyl. 364, is Givotia rottleriformis Griff., according to the actual specimens, leaves only, in Hermann's herbarium.* The second reference, from which Linnaeus took his specific name, is Aleurites moluccana (Linn.) Willd, without the slightest doubt. The specimen in Linnaeus's herbarium, quoted by J. Mueller, in DC. Prodr. 15² (1866) 958, under Mallotus moluccanus Muell.-Arg., is manifestly not the type and should be ignored in interpreting the Linnean species.

MACARANGA Thouars

MACARANGA MAPPA (Linn.) Muell.-Arg. in DC. Prodr. 15 ² (1866) 1000.

Ricinus mappa Linn. in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 124, Syst. ed. 10 (1759) 1277, Sp. Pl. ed. 2 (1763) 1430 (type!).

Acalypha mappa Willd. Sp. Pl. 4 (1805) 526 (type!).

Mappa moluccana Spreng. Syst. 3 (1826) 878 (type!).

Tanarius mappa O. Ktze. Rev. Gen. Pl. 2 (1891) 620 (type!).

Folium mappae Rumph. Herb. Amb. 3: 172, t. 108.

AMBOINA, Waë, Robinson Pl. Rumph. Amb. 361, November 26, 1913, in light forest, altitude about 20 meters, locally known as hahuhun.

Folium mappae Rumph. is the whole basis of Ricinus mappa Linn., and thus typifies all the synonyms cited above, for Mappa moluccana Spreng. is merely a new name for Ricinus mappa Linn. Burman f., Lamarck, Poiret, Roxburgh, and Pritzel followed Linnaeus in considering it as Ricinus mappa Linn., but other authors have followed Willdenow and Sprengel and have placed it under Acalypha and Mappa.

Macaranga mappa (Linn.) Muell.-Arg. is an imperfectly known species. In de Candolle's Prodromus 15² (1866) 1000 J. Mueller apparently compiled his description largely, if not wholly, from Rumphius and erroneously reduced *Croton grand*-

^{*} See Trimen Fl. Ceyl. 4 (1898) 50.

ifolius Blanco to Macaranga mappa Muell.-Arg, as a synonym. Pax and K. Hoffmann, in Engl. Pflanzenreich 63 (1914) 320. assumed that Mueller was correct in his reduction of Blanco's species, but drew up their description and prepared a figure of Macaranga mappa wholly from Philippine material. Philippine material cited by these authors has nothing whatever to do with the Amboina Macaranga mappa Muell.-Arg., which is so entirely distinct from Macaranga grandifolia (Blanco) Merr, that it must be placed in a different section of the genus. In vegetative characters, in its staminate inflorescence, and especially in its pistillate inflorescence, Macaranga grandifolia (Blanco) Merr. is totally different from Macaranga mappa Muell.-Arg. The whole description and the figure given by Pax and Hoffmann go with Macaranga grandifolia (Blanco) Merr., together with the synonyms Macaranga porteana André, Mappa porteana Wats., and Croton grandifolius Blanco.

MACARANGA HISPIDA (Blume) Muell.-Arg. in DC. Prodr. 15 2 (1866) 990.

Mappa hispida Blume Bijdr. (1825) 624. Halecus rugosa Rumph. Herb. Amb. 3: 198.

Amboina, Mahija, $Robinson\ Pl.\ Rumph.\ Amb.\ 363,\ 364,$ August 12, 1913, in light forest at an altitude of 250 meters, locally known as haleki and as $bilang\ kinar.$

No previous reduction of *Halecus rugosa* Rumph. has been suggested. Rumphius's description agrees perfectly with the specimens cited above, which are at the same time apparently typical *Macaranga hispida* Muell.-Arg., which was originally described by Blume from Moluccan specimens. The Philippine material referred here is very much more pubescent than the Amboina specimens.

MACARANGA TANARIUS (Linn.) Muell.-Arg. in DC. Prodr. 15 2 (1866) 997.

Ricinus tanarius Linn. in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 125, Syst. ed. 10 (1759) 1277, Sp. Pl. ed. 2 (1763) 1430 (type!).

Mappa tanarius Blume Bijdr. (1825) 624.

Ricinus mappa Roxb. Fl. Ind. ed. 2, 3 (1832) 690, non Linn.

Tanarius minor alba Rumph. Herb. Amb. 3: 190, $t.\ 121.$

Tanarius minor rubra Rumph. Herb. Amb. 3: 190.

AMBOINA, Hoenoet, Robinson Pl. Rumph. Amb. 362, October 18, 1913, in wooded glens, altitude about 200 meters, locally known as hunua.

The Rumphian figure and description are the whole basis of *Ricinus tanarius* Linn. and are hence the type of the species. Most early authors considered it under the Linnean binomial,

Ricinus tanarius Linn., which in modern literature appears as Macaranga tanarius Muell.-Arg. Spanoghe referred Tanarius minor Rumph, to Mappa glabra Juss., which Pax and Hoffmann retain as a distinct species, Macaranga glabra (Juss.) Pax & Hoffm. It is to be noted that the Amboina specimen, cited above, which agrees closely with the Rumphian description and with the greatly reduced figure, is by no means identical with Macaranga tanarius Muell.-Arg. as currently interpreted. leaves are larger, glabrous, the petioles longer, and the staminate inflorescences are lax, long peduncled, up to 30 cm wide, and including the peduncle about 40 cm long. It is typical Macaranga tanarius (Linn.) Muell.-Arg., and it seems very probable that a critical revision of the group must lead to the adoption of another specific name for the widely distributed form that appears in herbaria under the name Macaranga tanarius Muell.-Arg. Hasskarl, Neue Schlüssel (1886) 65, suggested that Tanarius minor rubra Rumph. might be the same as Mappa denticulata Blume=Macaranga denticulata Muell,-Arg., but the distribution of the latter precludes the correctness of this reduction. I consider it to be a color variant of Macaranaa tanarius Muell.-Arg.

MACARANGA INVOLUCRATA (Roxb.) Baill. Etud. Gén. Euphorb. (1858) 432.

Urtica involucrata Roxb. Hort. Beng. (1814) 47, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 592.

Halecus terrestris vulgaris Rumph. Herb. Amb. 3: 197, t. 127. Halecus terrestris alba Rumph. Herb. Amb. 3: 198, t. 127 bis.

AMBOINA, Batoe merah, Robinson Pl. Rumph. Amb. 365, 366, August 11, 1913, hillsides at an altitude of about 20 meters, the former with pistillate flowers and immature fruits, the latter with staminate flowers.

Halecus terrestris Rumph. was originally reduced by Linnaeus, with doubt, to Croton lacciferum Linn., in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 125, and following this reduction, was placed by Willdenow, Sp. Pl. 4 (1805) 590, under Aleurites laccifera Willd. Miquel, Fl. Ind. Bat. 1² (1859) 406, placed it, with doubt, under Acalypha bracteata Miq. The specimens cited above agree closely with the description and figure given by Rumphius and are, moreover, typical Macaranga involucrata Baill., a species known only from Amboina except for the plants cultivated in the botanic gardens at Calcutta and Buitenzorg.

As representing *Halecus terrestris alba* Rumph., I cite *Pl. Rumph. Amb. 357, 358*, from Amahoesoe and the town of Amboina, August, 1913, both with staminate flowers. The leaves are somewhat more pubescent and are less toothed than in the

two specimens cited above, yet they are apparently referable to the same species. The Rumphian figure is poor, but the short description applies closely to *Macaranga involucrata* Baill. Lamarck, Encycl. 2 (1786) 206, referred it, with doubt, to *Croton mauritianum* Lam.; while Miquel, Fl. Ind. Bat. 1 ² (1859) 385, thought that it might be *Claoxylon indicum* Hassk.

ACALYPHA Linnaeus

ACALYPHA AMENTACEA Roxb. Fl. Ind. ed. 2, 3 (1832) 676.

Acalypha stipulacea Klotz. in Nov. Act. Acad. Nat. Cur. 19 (1843) Suppl. 1: 416.

Acalypha amboynensis Benth. in Hook. Lond. Journ. Bot. 2 (1843) 233. Achyranthes spiciflora Burm. Index Alt. Herb. Amb. (1769) [5] (type!), non Acalypha spiciflora Burm. f.

Cauda felis agrestis rubra Rumph. Herb. Amb. 4: 84, t. 37, f. 1. Cauda felis agrestis alba Rumph. Herb. Amb. 4: 84, t. 37, f. 2.

AMBOINA, Robinson Pl. Rumph. Amb. 353, 354, July 22, 1913, along river banks at low altitudes in the vicinity of the town of Amboina, locally known as ekor kuching and ekor tusa.

Apparently but a single species is represented by the two forms figured and described by Rumphius, and I consider both to be referable to Acalypha amentacea Roxb., the type of which was from the Moluccas. At the same time I do not see how the Philippine Acalypha stipulacea Klotz. can be distinguished specifically from the Amboina form, Klotzsch's species having been reported from as far to the southeast as New Guinea. Acalupha amboynensis Benth. and probably the Amboina specimen referred by Bentham to Acalypha grandis Benth. doubtless are referable here. It is to be noted, however, that J. Mueller reduced Acalypha amentacea Roxb. to Acalypha fruticosa Forsk., but the range of Forskål's species militates very greatly against the correctness of this reduction. Cauda felis agrestis rubra was reduced by Hasskarl, Neue Schlüssel (1866) 79, to Acalypha grandis Benth., and no other disposition of it has been suggested. Cauda felis agrestis alba has been considered by numerous authors, but with little uniformity of opinion. Burman f., Fl. Ind. (1768) 203, erroneously placed it under Acalypha spiciflora Burm. f.=Cleidion spiciflorum (Burm. f.) comb. nov. (Cleidion javanicum Blume!). Linnaeus, Mant. 2 (1771) 127, erroneously placed it under Caturus spiciflorus Linn., which is a synonym of Acalypha hispida Burm., in which reduction he was followed by a few authors. Retzius, Obs. 5 (1789) 30, placed it under Acalypha betulina Retz., a species based on Ceylon specimens collected by Koenig and a synonym of Acalypha fruticosa Forsk.;

and finally Kosteletzsky, Allg. Med. Pharm. Fl. 5 (1836) 1743, placed it under Acalypha caturus Blume.

ACALYPHA HISPIDA Burm. f. Fl. Ind. (1768) 303, t. 61, f. 1.

Acalypha densiflora Blume Bijdr. (1826) 628.

Caturus spiciflorus Linn. Mant. 1 (1767) 127, non Acalypha spiciflora Burm. f.

Cauda felis domestica Rumph. Herb. Amb. 4: 82, t. 36.

Amboina, Robinson Pl. Rumph. Amb. 570, without data, apparently from cultivated plants.

Burman f. described and figured Acalypha hispida from a Javan specimen, but reduced Cauda felis domestica Rumph. to his species which is certainly the correct disposition of it. Blume misinterpreted Burman's Acalypha hispida and redescribed the same form as Acalypha densiftora Blume, reducing to it also Cauda felis domestica Rumph. The plant is widely cultivated for ornamental purposes in the Malayan region.

PLUKENETIA Linnaeus

PLUKENETIA CORNICULATA Sm. in Nov. Act. Soc. Sci. Upsal. 4 (1799) 4.

Pterococcus glaberrimus Hassk. in Flora 25 (1842) Beibl. 41.

Hedrayostylus glaberrimus Hassk. in Tijdschr. Nat. Wetensch. 10 (1840) 141.

Hedrayostylus corniculatus Hassk. Cat. Hort. Bot. Bogor. (1844) 234. Sajorium corniculatum Dietr. Svn. Pl. 5 (1852) 331.

Sajor volubilis Rumph. Herb. Amb. 1: 194, t. 79, f. 2.

Not represented in our Amboina collections. Sajor volubilis Rumph. was originally reduced by Linnaeus to the American Plukenetia volubilis Linn., in Stickman Herb. Amb. (1754) 8, Amoen. Acad. 4 (1759) 120, Sp. Pl. ed. 2 (1763) 1423, in which he was followed by Burman f., Lamarck, Spanoghe, and Murray. The form figured and described by Rumphius has been cited under all or most of the various synonyms listed above. It was cited by Willdenow, Sp. Pl. 4 (1805) 515, under Plukenetia corniculata Sm., and perhaps by Smith in the original description of the species, which I have not seen. Sajor volubilis Rumph. is doubtless correctly placed under Plukenetia corniculata Sm.

RICINUS Linnaeus

RICINUS COMMUNIS Linn. Sp. Pl. (1753) 1007.

Ricinus albus domesticus Rumph. Herb. Amb. 4: 92.

Ricinus albus agrestis Rumph. Herb. Amb. 4: 92.

Ricinus ruber Rumph. Herb. Amb. 4: 97, t. 41.

Amboina, Robinson Pl. Rumph. Amb. 337, 338, in waste places about Castle Victoria, town of Amboina, November 13, 1913, locally known as jarak puti daun besaar and jarak mera daun kechil.

The Rumphian descriptions apply to three forms of this polymorphous species. The reduction of *Ricinus ruber* was first made by Linnaeus, in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1276, Sp. Pl. ed. 2 (1763) 1430. The various forms described by Rumphius have been reduced by authors to *Ricinus lividus* Jacq., *R. viridis* Willd., *R. africanus* Mill., and *R. ruber* Miq. Fl. Ind. Bat. 1² (1858) 390; the last is not included in Index Kewensis; all are synonyms of *Ricinus communis* Linn.

ALEURITES Forster

ALEURITES MOLUCCANA (Linn.) Willd. Sp. Pl. 4 (1805) 590.

Jatropha moluccana Linn. Sp. Pl. (1753) 1006.

Croton moluccanus Lam. Encycl. 2 (1786) 207.

Aleurites triloba Forst. Char. Gen. (1776) 112.

Juglans camirium Lour. Fl. Cochinch. (1790) 573.

Aleurites ambinux Pers. Syn. 2 (1807) 587.

Camirium Rumph. Herb. Amb. 2: 180, t. 58.

Amboina, Hitoe lama, Robinson Pl. Rumph. Amb. 332, October 8, 1913, cultivated, altitude about 175 meters, locally known as kamiri.

Lamarck seems to have been the first author to reduce Camirium, placing it under Croton moluccanum Lam., which as Aleurites moluccana Willd. is certainly the correct disposition of it. By various authors it has been referred to Juglans camirium Lour., Aleurites triloba Forst., and A. ambinux Pers.—all synonyms of Aleurites moluccana (Linn.) Willd.

JATROPHA Linnaeus

JATROPHA CURCAS Linn. Sp. Pl. (1753) 1006.

Ricinus americanus Rumph. Herb. Amb. 4: 95.

AMBOINA, Binting, Robinson Pl. Rumph. Amb. 333, September 16, 1913, along roadsides at low altitudes, locally known as jarap.

This reduction was first made by Hasskarl, Neue Schlüssel (1866) 81, and is certainly the correct disposition of the plant Rumphius described as *Ricinus americanus*.

MANIHOT Adanson

MANIHOT UTILISSIMA Pohl Pl. Bras. Ic. 1 (1827) 32, t. 24.

Jatropha manihot Linn. Sp. Pl. (1753) 1007.

Yucca Rumph. Herb. Amb. 5: 325, 361.

Mandihocca Rumph. Herb. Amb. 5: 361.

Amboina, Soja, $Robinson\ Pl.\ Rumph.\ Amb.\ 336$, a roadside escape, altitude about 375 meters.

The reductions follow Hasskarl, Neue Schlüssel (1866) 128, 133, and are unquestionably correct.

CODIAEUM * Jussieu

CODIAEUM VARIEGATUM (Linn.) Blume Bijdr. (1825) 606.

Croton variegatus Linn. Sp. Pl. (1753) 1199 (type!).

Codiaeum simplex (chrysosticton) Rumph. Herb. Amb. 4: 65, t. 25.

AMBOINA. Waë and Soja, Robinson Pl. Rumph. Amb. 348, 349, October and November, 1913, cultivated and on coral hillsides at low altitudes, locally known as kodiho. Additional specimens, perhaps referable to one or the other of the numerous forms described by Rumphius are Robinson Pl. Rumph. Amb. 343, 344, 345, from cultivated plants, Soja, October 24, 1913, all sterile.

Croton variegatus Linn. is one of the few species published in the first edition of the Species Plantarum that were based entirely on Rumphius. It is typified by Codiaeum chrysosticton Rumph., Herb. Amb. 4: 65, t. 25. Here Linnaeus also reduced, as varieties, Codiaeum taeniosum Rumph., l. c. 68, t. 26, and Codiaeum silvestre Rumph., l. c. 69, t. 27, the latter, however, belonging with Codiaeum bractiferum Roxb. These reductions were repeated in the later writings of Linnaeus, Stickman Herb, Amb. (1754) 16, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1275, Sp. Pl. ed. 2 (1763) 1424, and were generally accepted by later authors. Hasskarl, Neue Schlüssel (1866) 76, has reduced many of the numerous forms characterized by Rumphius to varieties of Codiaeum variegatum (Linn.) Blume, but the distinctions between the very numerous varieties and forms of this polymorphous species are vague and unsatisfactory. The forms characterized by Rumphius are as follows:

Codiaeum chrysosticton medium.
Codiaeum chrysosticton latifolium.
Codiaeum chrysosticton angustifolium
Codiaeum chrysosticton medium rubrum.
Codiaeum chrysosticton rubro-maculatum.
Codiaeum erythrosticton parvifolium.
Codiaeum nigrum medium.
Codiaeum parvifolium viride.

CODIAEUM VARIEGATUM (Linn.) Blume f. TAENIOSUM Muell.-Arg. in DC. Prodr. 15 ² (1866) 1120.

Codiaeum taeniosum Rumph. Herb. Amb. 4: 68, t. 26, f. 1.

Amboina, Soja, Robinson Pl. Rumph. Amb. 346, 347, October 24, 1913, cultivated, altitude about 300 meters.

A narrow-leaved form of $Codiaeum\ variegatum\ (Linn.)$ Blume, originally placed by Linnaeus as var. β Sp. Pl. (1753) 1199. Rumphius describes two forms under $Codiaeum\ taeniosum$, lu-

^{*} Retained name, Vienna Code; Phyllaurea Lour. (1790) is older.

teum and viride, the latter, t. 26, f. 2, with crisped leaves=Croton variegatum var. crispum Muell.-Arg.

CODIAEUM BRACTIFERUM Roxb. Fl. Ind. ed. 2, 3 (1832) 680.

Codiaeum brevistylum Pax & K. Hoffm. in Engl. Pflanzenreich 47 (1911) 28.

Codiaeum silvestre Rumph. Herb. Amb. 4: 69, t. 27.

AMBOINA, Koesoe koesoe sereh, Robinson Pl. Rumph. Amb. 340, August 23, 1913, with staminate and pistillate flowers. Probably referable here are Robinson Pl. Rumph. Amb. 341, 342, from coral hillsides at Waë, November 28, 1913, both sterile, and one lacking the characteristic reduced "bracts" figured by Rumphius and described by Roxburgh.

Codiaeum silvestre Rumph. was originally reduced by Linnaeus to Codiaeum variegatum Linn. var. γ Sp. Pl. (1753) 1199, but represents an entirely distinct species, readily separated by its pubescent ovaries and its vegetative characters. The greatly reduced, bract-like leaf is very characteristic, but is present opposite only the uppermost leaves and apparently falls early. Codiaeum bractiferum Roxb. is not listed in Index Kewensis and was described as follows:

C. bractiferum. R. Shrubby. Leaves linear-oblong, smooth, entire. Racemes terminal, becoming lateral with an immense orbicular bract at the base. Codiaeum silvestre Rumph. Amb. IV. t. 27. A native of the Moluccas.

I have placed the recently described Amboinese *Codiaeum brevistylum* Pax & K. Hoffm. as a synonym, although in the description the characteristic, reduced, bract-like leaves are not mentioned, possibly because they had fallen from the specimens collected by Dolleschal.

ENDOSPERMUM Bentham

ENDOSPERMUM MOLUCCANUM (Teysm. & Binn.) Becc. Malesia 2 (1884) 38.

Capellania moluccana Teysm. & Binn. in Nat. Tijdschr. Ned. Ind. 29 (1866) 239.

Arbor regis Rumph. Herb. Amb. 2: 257, t. 85.

This species is not represented in our Amboina collections; however, it has been collected in Amboina by Dolleschal. Linnaeus originally referred Arbor regis Rumph., with doubt, to Hernandia sonora Linn., in Stickman Herb. Amb. (1754) 11, Amoen. Acad. 4 (1759) 122, thus: "85. Arbor regis=Hernandia sonora? (sed fructus alienus.)." In this reduction he was followed by Burman f., Lamarck, Willdenow, Persoon, Henschel, Spanoghe, Dietrich, Miquel, and other authors. Beccari, Malesia 2 (1884) 38, first made the correct reduction of it to

Endospermum moluccanum (Teysm. & Binn.) Becc., the type of Capellania moluccana Teysm. & Binn. being from the Moluccas. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 45, thought that it was referable to Tournefortia.

EXCOECARIA Linnaeus

EXCOECARIA AGALLOCHA Linn. Syst. ed 10 (1759) 1288, Amoen. Acad. **4** (1759) 122, Sp. Pl. ed. 2 (1763) 1451 (type!).

Arbor excoecans Rumph. Herb. Amb. 2: 237, t. 79 3, t. 80 9.

Amboina, Paso, Robinson Pl. Rumph. Amb. 335, October 29, 1913, along the seashore, locally known as kayu matta buta.

The Rumphian illustration and description are the whole basis of *Excoecaria agallocha* Linn. as originally published by Linnaeus. The reduction, certainly correct, has been accepted by all authors. The form briefly described by Rumphius as Arbor excoecans (II variegata), Herb. Amb. 2: 239, can scarcely be other than this species.

HOMALANTHUS Jussieu

HOMALANTHUS POPULNEUS (Geisel.) Pax in Engl. & Prantl Nat. Pflanzenfam. 3 5 (1890) 96, f. 60.

Stillingia populnea Geisel. Croton. Monogr. (1807) 80.

Carumbium populneum Muell.-Arg. in DC. Prodr. 152 (1866) 1144.

Frutex excoecans Rumph. Herb. Amb. 4: 130, t. 65.

AMBOINA, Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 329, October 3, 1913, in light forests, locally known as daun matta bali.

Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 85, reduced Frutex excoecans Rumph. to Carumbium populifolium Reinw., which is a synonym of Homalanthus populneus (Geisel.) Pax. The Amboina form appears to be typical Homalanthus populneus Pax [that is, var. genuinus Pax in Engl. Pflanzenreich 52 (1912) 46], which extends from the Malay Peninsula to Java, Sumatra, Borneo, and Celebes.

PIMELEODENDRON Hasskarl

PIMELEODENDRON AMBOINICUM Hassk. Versl. en Med. Akad. Amsterdam 4 (1855) 140.

Carumbium amboinicum Miq. Fl. Ind. Bat. 12 (1859) 413.

Arbor pinguis Rumph. Herb. Amb. 2: 249, t. 83.

Amboina, Hoenoet, Robinson Pl. Rumph. Amb. 174, October 13, 1913, at low altitudes, locally known as mamina.

Arbor pinguis Rumph. was first correctly placed by Hasskarl as a synonym of *Pimeleodendron amboinicum* Hassk. Desrouss, in Lam. Encycl. 3 (1791) 693, thought that it might belong in

the Sapotaceae, while Henschel, Vita Rumph. (1833) 152, thought that it might be Cambogia gutta Linn. The species is known only from Amboina.

SAPIUM P. Browne

SAPIUM INDICUM Willd. Sp. Pl. 4 (1805) 572.

Ichthyoctonos litorea Rumph. Herb. Amb. 3: 213, t. 138.

This species is not represented in our Amboina collections, but I reduce the Rumphian species to Sapium indicum Willd. with great confidence that this is the correct disposition of it. Baillon, Etud. Gén. Euphorb. (1858) 518, suggested that it was a Stillingia; while Hasskarl, Neue Schlüssel (1866) 68, reduced it to Excoecaria virgate Zoll. & Mor.—Sapium virgatum Hook. f., a species very closely allied to Sapium indicum Willd. Sapium virgatum Hook. f. is confined to Java, according to Pax & K. Hoffmann, in Engl. Pflanzenreich 52 (1912) 250, while Sapium indicum Willd. extends from India to New Guinea. The figure given by Rumphius is fairly good, while the description applies to Sapium indicum Willd. in all respects.

EUPHORBIA Linnaeus

EUPHORBIA HIRTA Linn. Sp. Pl. (1753) 454.

Euphorbia pilulifera Linn. Sp. Pl. (1753) 454.

Euphorbia capitata Lam. Encycl. 2 (1788) 422.

Esula esculenta Rumph. Herb. Amb. 6: 54, t. 23, f. 2.

AMBOINA, Hitoe lama, Robinson Pl. Rumph. Amb. 352, October 8, 1913, in cultivated ground, altitude about 150 meters; also represented by Rel. Robins. 2497, from Boeton Island, July 13, 1913.

Esula esculenta Rumph. was first reduced by Linnaeus to Euphorbia hirta Linn., in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 1048, Sp. Pl. ed. 2 (1762) 651, which is certainly the correct disposition of it, and in which he was followed by many authors. In recent literature the species appears chiefly as Euphorbia pilulifera Linn., which is a synonym of Euphorbia hirta Linn., the latter having page priority. Lamarck referred it, with doubt, to Euphorbia capitata Lam., a synonym of Euphorbia hirta Linn.

EUPHORBIA NERIIFOLIA Linn. Sp. Pl. (1753) 451.

Euphorbia ligularia Roxb. Hort. Beng. (1814) 36, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 465.

Ligularia lactea Rumph. Herb. Amb. 4: 88, t. 40.

Ligularia minor Rumph. Herb. Amb. 4: 90.

This species is not represented in our Amboina collections. This reduction of Ligularia lactea Rumph. was first made by Linnaeus, in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 126, Sp. Pl. ed. 2 (1762) 648, and is apparently the correct disposition of it. *Euphorbia ligularia* Roxb. was described from Bengal specimens, to which *Ligularia* Rumph. was reduced. Hasskarl, Neue Schlüssel (1866) 81, referred *Ligularia minor* Rumph. to *Euphorbia edulis* Lour., but the form described by Rumphius was probably only a somewhat reduced one of *Euphorbia neriifolia*.

Ligularia lactea e Java, briefly described by Rumphius, Herb. Amb. 4:88, was thought by Hasskarl, Neue Schlüssel (1866) 80, to be possibly the same as *Euphorbia splendens* Boj., but this reduction is probably incorrect.

EUPHORBIA TIRUCALLI Linn. Sp. Pl. (1753) 452.

Ossifraga lactea Rumph. Herb. Amb. 7: 62, t. 29.

This species is not represented in our Amboina collections. *Ossifraga lactea* was first reduced to *Euphorbia tirucalli* Linn. by Linnaeus, in Amoen. Acad. 4 (1759) 137, Syst. ed. 10 (1759) 1047, Sp. Pl. ed. 2 (1762) 649. This is manifestly the correct disposition of it and has been accepted by all authors who have had occasion to cite the Rumphian illustration.

EUPHORBIACEAE indet.

Involucrum cusci Rumph. Herb. Amb. 4: 73.

The description, while rather short, is sufficiently definite to indicate that a euphorbiaceous plant is intended. I am, however, unable to refer it to its proper genus from the description alone. Hasskarl, Neue Schlüssel (1866) 77, suspects it to be an *Elateriospermum* or a species of some allied genus.

ANACARDIACEAE

MANGIFERA Linnaeus

MANGIFERA FOETIDA Lour. Fl. Cochinch. (1790) 160.

Manga foetida Rumph. Herb. Amb. 1: 98, t. 28.

AMBOINA, Hitoe lama, Robinson Pl. Rumph. Amb. 126, beside clearings, altitude about 175 meters, locally known as ambachan, bachan, and bichang.

Manga foetida Rumph. was reduced by Loureiro in the original description of Mangifera foetida Lour. and is undoubtedly the form that Loureiro described from Cochin-China material, as the species is widely distributed in the Indo-Malayan region in cultivation. All authors have followed Loureiro in this reduction.

MANGIFERA CAESIA Jack in Roxb. Fl. Ind. 2 (1824) 441.

Mangifera kemanga Blume Mus. Bot. 1 (1850) 202.

Manga foetida II Rumph. Herb. Amb. 1: 99.

This species is not represented in our Amboina collections. The reduction follows Blume, who cites *Mangifera foetida II* under the native name *wani* in the original description of *Mangifera kemanga*. It should be also compared with *Mangifera odorata* Griff.

MANGIFERA UTANA Ham. in Mem. Wern. Soc. 5 ² (1826) 326 (type!).

Mangifera membranacea Blume Mus. Bot. 1 (1850) 195 (type?).

Mangifera taipan Ham. ex Miq. Fl. Ind. Bat. 1 ² (1858) 631.

Manga silvestris I Rumph. Herb. Amb. 1: 97, t. 27.

Nothing resembling this species occurs in our Amboina collections. The Rumphian figure and description are the whole basis of *Mangifera utana* Ham., a species properly published, but overlooked by the compilers of Index Kewensis, in which it is not listed. *Mangifera membranacea* Blume is based, at least in part, on the same Rumphian description and figure; like *Mangifera utana* Ham. it is a species of very doubtful status, placed by Engler, in DC. Monog. Phan. 4 (1883) 215, under the heading "species omnino incertae." The figure very closely resembles the Philippine form, *Mangifera monandra* Merr.

MANGIFERA INDICA Linn. Sp. Pl. (1753) 200.

Manga domestica Rumph. Herb. Amb. 1: 93, t. 25, 26.

Amboina, Paso, Robinson Pl. Rumph. Amb. 125, October 29, 1913, locally known as manga; town of Amboina, Pl. Rumph. Amb. 123, 124, August 24, 1913, locally known as pau and manga pau.

Linnaeus originally reduced both $tt.\ 25$ and 26 to Mangifera indica Linn., in Stickman Herb. Amb. (1754) 7, Amoen. Acad. 4 (1759) 119; and practically all authors have followed him, at least in the reduction of Manga domestica as represented by $t.\ 25$. The form represented by $t.\ 26$ is almost certainly nothing but Mangifera indica; at least no characters are indicated by which it can be distinguished. It has been cited by Blume and by Miquel as Mangifera altissima Blanco, a very characteristic species that has very little in common with the figure given by Rumphius; whatever else $t.\ 26$ may represent, it is certainly not Mangifera altissima Blanco.

Rumphius describes five forms of *Manga domestica*, all of which, with one exception, are surely referable to *Mangifera indica* Linn. The exception is *Arbor mangifera V minor*, which Blume has reduced to *Mangifera minor* Blume, Mus. Bot. 1

(1850) 198, his description being based on specimens from Celebes.

MANGIFERA MINOR Blume Mus. Bot. 1 (1850) 198.

Manga domestica minor Rumph. Herb. Amb. 1: 94.

Mangifera minor Blume was based on specimens from Celebes, and Blume reduced the Rumphian species as a synonym in the original description of the species. The species is a valid one, placed by Engler near Mangifera longipes Griff.; DC. Monog. Phan. 4 (1883) 202. Blume was undoubtedly correct in reducing here Manga minor Rumph.

MANGIFERA LAURINA Blume Mus. Bot. 1 (1850) 195.

Manga simiarum Rumph. Herb. Amb. 1: 94.

The reduction follows Blume, who placed the Rumphian species as a synonym of *Mangifera laurina* Blume in the original description of the species.

MANGIFERA TAIPAN Ham. in Mem. Wern. Soc. 5 ² (1826) 326 (type!). Mangifera silvestris altera Rumph. Herb. Amb. 1: 97.

This species is based wholly on Rumphius's description and is of entirely doubtful status. Engler, in DC. Monog. Phan. 4 (1883) 215, reduces it to *Mangifera membranacea* Blume, Mus. Bot. 1 (1850) 195, following Blume, but Blume's species is in turn one of entirely doubtful status. Hamilton's name is the older and should be maintained if future investigations show that the species is a valid one.

MANGIFERA RUMPHII Pierre Fl. Forest. Cochinch. 4 (1897) t. 364, f. E, excl. syn. Blanco.

Pauw Rumph. Herb. Amb. 7: 18, t. 11 (incl. I maxima, II media, III minima).

The three forms described by Rumphius under the name *Pauw*, were referred by Hasskarl to *Mangifera altissima* Blanco, but the descriptions and the figure pertain to a totally different species, which Pierre has described from Banda specimens as *Mangifera rumphii* Pierre.

GLUTA Linnaeus

GLUTA BENGHAS Linn. Mant. 2 (1771) 293.

Terminalia vernix Lam. Encycl. 1 (1783) 350 (type!). Stagmaria verniciflua Jack. Malay Miscel. 3 (1823) 12. Arbor vernicis Rumph. Herb. Amb. 2: 259, t. 86.

Gluta benghas Linn. was based on Javan specimens, perhaps benghas being a typographical error, as the specific name is taken from its native name rengas. Arbor vernicis Rumph.

probably includes more than *Gluta benghas* Linn., but the figure and the description, at least for the most part, apparently belong here. Loureiro, Fl. Cochinch. (1790) 587, discusses it under *Vernicia montana* Lour., but does not refer it to this species, which is supposed to be *Aleurites moluccana* Willd. It is the type and whole basis of *Terminalia vernix* Lam. Hasskarl seems to have been the first author to reduce it to *Gluta benghas* Linn., Flora (1844) 619, in which he was followed by Endlicher, Blume, and Miquel, and, very generally, by recent authors. Miquel also discusses it following *Terminalia angustifolia* Jacq., Fl. Ind. Bat. 1¹ (1855) 599, overlooking the fact that *Terminalia vernix* Lam., which he considered to be a doubtful species, was based on *Arbor vernicis* Rumph., which in the same work, 1² (1858) 624, he correctly placed under *Gluta benghas* Linn.

SPONDIAS Linnaeus

SPONDIAS DULCIS Forst. Prodr. (1786) 34.

Evia acida Blume Mus. Bot. 1 (1850) 234. Spondias acida Blume ex Steud. Nomencl. ed. 2, 2 (1841) 625. Spondias dulcis Forst. var. acida Engl. in DC. Monog. Phan. 4 (1883) 247.

Condondum Rumph. Herb. Amb. 1: 161, t. 60.

This is not represented in our Amboina collections, but the species is known to occur in the island. I have followed Blume in this reduction, as it is very probable that he was correct in referring Condondum Rumph. to Evia acida Blume. Engler considers that Blume's Evia acida is a variety of Spondias dulcis Forst. Linnaeus originally reduced Condondum to Chrysobalanus icaco Linn., in Stickman Herb. Amb. (1754) 8, Amoen. Acad. 4 (1759) 119, a pure error on his part, the reduction being abandoned in his later writings. Lamarck, Encycl. 3 (1791) 697, followed by Hamilton, Mem. Wern. Soc. 5 ² (1826) 358, thought that it was Mangifera pinnata Linn. f., which was figured by Rumphius under the name Condondum malaccense, t. 61. Mangifera pinnata Lam., non Linn. f., is Sorindeia madagascariensis Thouars.

SPONDIAS PINNATA (Linn. f.) Kurz in Pegu Report (1875) A 44.

Mangifera pinnata Linn. f. Suppl. (1781) 156.

Evia amara Commers. ex Blume Mus. Bot. 1 (1850) 234.

Spondias mangifera Willd. Sp. Pl. 2 (1799) 751.

Spondias amara Lam. Encycl. 4 (1797) 261.

Condondum malaccense Rumph. Herb. Amb. 1: 162, t. 61.

This is not represented in our Amboina collections. The reduction, apparently the correct disposition of Condondum

malaccense Rumph., follows Blume and other authors. Blume makes the Rumphian figure and description the type of Evia amara Commers. var. tuberculosa Blume; and Engler, recognizing the variety, transfers it to Spondias mangifera Willd. var. tuberculosa Blume. The form described and figured, however, is probably nothing but typical Spondias pinnata (Linn. f.) Kurz.

DRACONTOMELUM Blume

DRACONTOMELUM MANGIFERUM Blume Mus. Bot. 1 (1850) 231.

Poupartia mangifera Blume Bijdr. (1826) 1160, excl. syn. Pomum draconum Rumph. Herb. Amb. 1: 157, t. 58.

AMBOINA, Kaju poeti, Robinson Pl. Rumph. Amb. 127, October 24, 1913, in light woods, altitude about 200 meters, locally known as bua rau.

Hamilton, Mem. Wern. Soc. 5 ² (1828) 358, thought *Pomum draconum* Rumph. to be "pretty clearly a Spondias," but Blume, Mus. Bot. 1 (1850) 231, referred it to *Dracontomelum mangiferum* Blume, which is apparently the correct disposition of it, and one that has been accepted by subsequent authors, including Walpers, Miquel, and Engler. The species is widely distributed in the Malay Archipelago.

DRACONTOMELUM SYLVESTRE Blume Mus. Bot. 1 (1850) 231.

Pomum draconum silvestre Rumph. Herb. Amb. 1: 159, t. 59.

This is not represented in our Amboina collections.

reduction was made by Blume in the original description of *Dracontomelum sylvestre* and is probably the correct disposition of it. According to Blume the species is widely distributed in the Malay Archipelago, but in the most recent monograph of the group Engler cites specimens from Borneo only.

ANACARDIUM Linnaeus

ANACARDIUM OCCIDENTALE Linn. Sp. Pl. (1753) 383.

Cassuvium pomiferum Lam. Encycl. 1 (1783) 22. Cassuvium Rumph. Herb. Amb. 1: 177, t. 69.

The common cashew is not represented in our Amboina collections, but is very generally cultivated throughout the Malayan region. Cassuvium Rumph. was originally reduced by Linnaeus to Anacardium occidentale Linn., in Stickman Herb. Amb. (1754) 8, Amoen. Acad. 4 (1759) 120, Syst. ed. 10 (1759) 1019, Sp. Pl. ed. 2 (1762) 548, which reduction is certainly correct and has been very generally followed by subsequent authors. Lamarck, however, redescribed the same species as Cassuvium pomiferum Lam., referring here Cassuvium Rumph., from which he took the generic name.

SEMECARPUS Linnaeus f.

SEMECARPUS CASSUVIUM Roxb. Hort. Beng. (1814) 32 (type!); Spreng. Syst. 1 (1825) 936; Roxb. Fl. Ind. ed. 2, 2 (1832) 85.

Anacardium longifolium Lam. Encycl. 1 (1763) 139, p. p., quoad syn. Rumph.

Cassuvium silvestre Rumph. Herb. Amb. 1: 179, t. 70.

Amboina, Paso, Way tommo, and near the town of Amboina, *Robinson Pl. Rumph. Amb. 119, 120, 121, 122*, October, November, 1913, in thickets and light woods, sea level to an altitude of 20 meters, locally known as *saku*.

Cassuvium silvestre Rumph. is the whole basis of Semecarpus cassuvium Roxb. as originally published by him, Hort. Beng. (1814) 32, by citation.* Sprengel apparently based his short description partly, if not entirely, on Anacardium longifolium Lam., which is the same as Semecarpus cassuvium Roxb. only in small part. Roxburgh's actual description, as published in 1832, was based on specimens originating in the Moluccas and cultivated in the botanic garden at Calcutta.

SEMECARPUS FORSTENII Blume Mus. Bot. 1 (1850) 188.

Cassuvium silvestre s. Lau Lassi (e Ternate) Rumph. Herb. Amb. 1: 180.

The reduction follows Blume, who so reduced the Ternate form mentioned by Rumphius, in the original description of *Semecarpus forstenii* Blume, which was based on actual specimens collected in Ternate by Forsten.

CELASTRACEAE

EUONYMUS Linnaeus

EUONYMUS sp.?

Caju lape lape Rumph. Herb. Amb. 3: 78, t. 50.

Nothing resembling the form figured by Rumphius occurs in our Amboina collections. The figure looks suspiciously like certain species of *Euonymus*, while the description applies fairly closely. Blume, Rumphia 3 (1837) 167, notes that it cannot be a *Mischocarpus*; Miquel, Fl. Ind. Bat. 1 ² (1858) 567, mentions it under *Cupania fuscescens* Miq.=Mischocarpus fuscescens Blume; while Hasskarl, Neue Schlüssel (1866) 53, quotes Teysmann's opinion that it was an *Elodea* (*Tridesmis*) = Cratoxylon, which is an impossible disposition of it. It may possibly be a sapindaceous plant, but the probabilities are that it is a poorly described and figured species of *Euonymus*.

^{*} See C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 413, 418.

PERROTTETIA Humbolt, Bonpland, and Kunth

PERROTTETIA MOLUCCANA (Blume) Loesen. in Engl. & Prantl. Nat. Pflanzenfam. 3 5 (1892) 220.

Caryospermum moluccanum Blume Mus. Bot. 1 (1850) 176. Vertifolia rubra Rumph, Herb, Amb. 3: 100, t. 67.

AMBOINA, Hitoe messen, Mahija, and Lateri, Robinson Pl. Rumph. Amb. 157, 160, 601, August and November, 1913, in forests, altitude 100 to 250 meters.

No previous reduction of *Vertifolia rubra* Rumph. has been suggested other than Hasskarl's tentative reference of it to the *Euphorbiaceae*. The specimens cited above agree perfectly with the description and very well with the figure, the fault in the figure being that the flowers are relatively greatly enlarged. Hasskarl was uncertain to which description, *Vertifolia alba* or *Vertifolia rubra*, the figure pertained, as Rumphius does not indicate which one he intended it for. The descriptions pertain to two entirely different plants, of different genera, and probably of different families. The Amboina material shows definitely that the figure belongs with *Vertifolia rubra* Rumph. It is of interest to note that the species is the type of the genus *Caryospermum* and that Blume's material was from Amboina.

ICACINACEAE

CARDIOPTERYX Wallich

CARDIOPTERYX MOLUCCANA Blume Rumphia 3 (1847) 207.

Olus sanguinis Rumph. Herb. Amb. 5: 482, t. 180.

This is not represented in our Amboina collections. Olus sanguinis Rumph. was originally reduced by Linnaeus, through error, to Dioscorea sativa Linn., in Stickman Herb. Amb. (1754) 25, Amoen. Acad. 4 (1759) 133, in which he was followed by a number of authors. It has also been referred to Dioscorea cliffortiana Lam. and to D. deltoidea Wall. Blume placed it in Cardiopteryx (often spelled Cardiopteris) in the original description of Cardiopteryx moluccana Blume, which is manifestly the correct disposition of it.

STEMONURUS Blume

STEMONURUS sp.

Fructus bobae Rumph. Herb. Amb. 3: 166, t. 105.

Nothing resembling this form is represented in our Amboina collections. The figure is an excellent one and presents an icacinaceous plant, undoubtedly of the genus *Stemonurus*. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 62, placed it in *Platea*, another genus of the same family.

SAPINDACEAE *

CARDIOSPERMUM Linnaeus

CARDIOSPERMUM HALICACABUM Linn. Sp. Pl. (1753) 366.

Halicacabus peregrinus Rumph. Herb. Amb. 6: 61, t. 24, f. 2.

This common and well-known species is not represented in our Amboina collections. The reduction of the Rumphian *Halica-cabus peregrinus* was first made by Linnaeus, in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 1007, Sp. Pl. ed. 2 (1762) 525, which has been followed by all succeeding authors. The exact form figured by Rumphius is apparently *Cardiospermum halicacabum* Linn. var. *microcarpum* Blume.

ALLOPHYLUS Linnaeus

ALLOPHYLUS TIMORENSIS (DC.) Blume Rumphia 3 (1847) 130 (emend. Radlk.).

Schmidelia timorensis DC. Prodr. 1 (1824) 611.

Ampacus litorea prima Rumph. Herb. Amb. 2: 188.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 53, August 8, 1913, along the beach, with the doubtful native names biking ubat and kaya besi.

The position of this form, as described by Rumphius, has not previously been indicated, but *Ampacus litorea prima* is unquestionably identical with *Allophylus timorensis* (DC.) Blume.

ALLOPHYLUS TERNATUS (Forst.) Radlk. in Engl. & Prantl Nat. Pflanzenfam. 3 5 (1895) 313.

Aporetica ternata Forst. Char. Gen. (1776) 132.

Allophylus amboinensis Blume Rumphia 3 (1847) 129.

Ampacus litorea (angustifolia) minor Rumph. Herb. Amb. 2: 189.

AMBOINA, Amahoesoe, Robinson Pl. Rumph. Amb. 52, September 18, 1913, along the beach. Another form of the same species is represented by Rel. Robins. 1603, from Paso, Amboina, Oct. 29, 1913, with elongated racemes, approaching Allophylus leptococcus Blume.

Blume, Rumphia 3 (1847) 129, referred Ampacus litorea (angustifolia) minor to his Allophylus amboinensis, which is an exact synonym of Allophylus ternatus (Forst.) -Radlk. Miquel, Fl. Ind. Bat. 1² (1859) 575, referred it to Allophylus timorensis (DC.) Blume, but Ampacus litorea prima Rumph. is manifestly Allophylus timorensis Blume, while the form from Leytimor is surely A. ternatus Radlk. (A. amboinensis Blume).

It is to be noted that Ampacus angustifolius Rumph., Herb.

^{*} I am indebted to Dr. L. Radlkofer for the identifications of the specimens cited in this family.

Amb. 2: 188, t. 62, as described and figured, under which the two species discussed above are briefly described, is no *Allophylus*, but is *Evodia amboinensis* Merr. (*Evodia triphylla* auct. plur., non DC.) (see p. 290).

SAPINDUS Linnaeus

SAPINDUS RARAK DC. Prodr. 1 (1824) 608.

Dittelasma rarak Hook. f. in Benth. & Hook. f. Gen. Pl. 1 (1862) 395. Saponaria Rumph. Herb. Amb. 2: 134.

This is not represented in our Amboina collections, but Saponaria is unquestionably the same as Sapindus rarak DC., which was based in part on Rumphius and in part on a Javan specimen. Rumphius notes that the plant was abundant in Java, but occurred in Amboina only as an introduced one. Burman f., Fl. Ind. (1768) 91, referred it to Sapindus saponaria Linn., in which he was followed by Loureiro, Fl. Cochinch. (1790) 238, but Sapindus saponaria Linn. is a species entirely distinct from S. rarak DC.

LEPISANTHES Blume

LEPISANTHES sp.?

Arbor palorum alba parvifolia Rumph. Herb. Amb. 3: 98, t. 65 (excl. f. A.).

The form figured and described by Rumphius is of doubtful status. Poiret, in Lam. Encycl. Suppl. 3 (1813) 479, thought that it might be *Pometia pinnata* Forst., which is certainly incorrect. De Candolle, Prodr. 1 (1824) 615, erroneously identified it as *Stadmannia sideroxylon* DC. Blume, Rumphia 3 (1837–47) 149, thought that it might be the same as *Scorodendron pallens* Blume=Lepisanthes pallens Radlk., which was described from Timor specimens. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 55, placed it under *Irine=Irina=Pometia*, where it certainly does not belong. If Blume's surmise that it is identical with *Scorodendron pallens* is correct, it is strange that Rumphius did not mention the peculiar onion-like odor that is characteristic of Blume's species.

SCHLEICHERA Willdenow

SCHLEICHERA OLEOSA (Lour.) comb. nov.

Pistacia oleosa Lour. Fl. Cochinch. (1790) 615.

Schleichera trijuga Willd. Sp. Pl. 4 (1805) 1096.

Cussambium spinosum Ham. ex Henschel Vita Rumph. (1833) 143 (type!).

Cussambium Rumph. Herb. Amb. 1: 154, t. 57.

This species is not represented in our Amboina collections, but 144971—22

Cussambium, although poorly figured by Rumphius, is certainly referable to this widely distributed Indo-Malayan species. It was first reduced by Loureiro, Fl. Cochinch. (1790) 615, to his Pistacia oleosa, and the plant he described from specimens cultivated in Cochin-China is apparently identical with Schleichera trijuga Willd.; at any rate it is no Pistacia. Accordingly, Loureiro's specific name, being the older, is here adopted. The reference of Cussambium to Schleichera trijuga Willd. was first made by Blume, Rumphia 3 (1847) 147, who also cites Pistacia oleosa Lour. as a synonym. Cussambium spinosum Ham. is typified by the Rumphian plate and description.

EUPHORIA Commerson

EUPHORIA LONGANA Lam. Encycl. 3 (1791) 574.

Nephelium longana Cambess, in Mem. M's 128, 129, 128 Linkeng Rumph, Herb. Amb. 1: 157.

This Chinese species is briefly mentioned by Rumphius, who discusses it under the Chinese name *linkeng*. The material he had was unquestionably *Euphoria longana* Lam.

CUBILIA Blume

CUBILIA BLANCOI Blume Rumphia 2 (1849) 101.

Euphoria cubili Blanco Fl. Filip. (1837) 287.

Cubilia rumphii Blume l. c. 101; Koord. in Ic. Bogor. 1 (1904) 51, t. 92, 93.

Boa massy Rumph. Herb. Amb. 7: 5, t. 3.

This species is not represented in our Amboina collections, but is now known from a number of localities in the Philippines (Luzon to Mindanao), from Buru, and from Celebes. The reduction was first made by Blume, in the original publication of the genus cited above, but he recognized two species, the first Cubilia blancoi, the second C. rumphii; it is very apparent that the two are identical, and that, so far as material at present available shows, the genus Cubilia is monotypic and is confined to the Philippines and the Moluccas. Blume had no Philippine material and interpreted Euphoria cubili Blanco solely from Blanco's description. Doctor Radlkofer, under date of July 5, 1904, in discussing the identity of certain Philippine specimens with Cubilia blancoi and C. rumphii, writes as follows:

Your Philippine plant seems to be quite identical with the Celebes one [coll. Koorders] and so *Cubilia blancoi* and *C. rumphii* will fall together, and the latter must become a synonym of the former.

The differences indicated by Blume in the descriptions of what

he took to be two species are certainly due only to translations of Blanco's descriptive terms in indicating the fruit and leaf characters.

POMETIA Forster

POMETIA PINNATA Forst. Char. Gen. (1776) 110.

Irina glabra Blume Bijdr. (1825) 230.

Dabanus (incl. Dawan batu, Dawan mera, Dawan puti) Rumph. Herb. Amb. 3: 31, 32, tt. 16, 17.

AMBOINA, Negri lama, Robinson Pl. Rumph. Amb. 2, September 8, 1913, on river banks at an altitude of about 25 meters, locally known as tauwan itam; Kati-kati, Robinson Pl. Rumph. Amb. 3, October 7, 1913, in light forests, altitude about 90 meters.

The reduction of Dabanus of Rumphius to Irina glabra Blume was made by Blume, Rumphia 3 (1847) 114; that is, Dawan batu Rumph. Herb. Amb. 3: 31, t. 17, to Irina glabra var. solida Blume and Dawan mera Rumph. Herb. Amb. 3: 32 to Irina glabra var. rubra Blume. Irina glabra Blume is a synonym of Pometia pinnata Forst. All three forms indicated by Rumphius are apparently referable to the widely distributed and variable Pometia pinnata Forst. Plate 16 represents a fruiting specimen and plate 17 a flowering specimen, the latter distinctly characteristic, the former rather crude, yet unmistakably a Pometia.

JAGERA Blume

JAGERA SERRATA (Roxb.) Radlk. in Sitzb. Math.-Phys. Acad. Muench. 8 (1878) 303.

Sapindus serratus Roxb. Hort. Beng. (1814) 88 nomen nudum, 4'4. Ind. ed. 2, 2 (1832) 284.

Jagera speciosa Blume Rumphia 3 (1847) 155.

Papaja silvestris minor Rumph. Herb. Amb. 1: 150, t. 53, f. 2.

This species is not represented in our Amboina collections. Blume makes this reduction in the original description of *Jagera* speciosa, which is probably the correct disposition of *Papaja* silvestris minor Rumph.

MISCHOCARPUS Blume

MISCHOCARPUS FUSCESCENS Blume Rumphia 3 (1837-47) 169.

Arbor palorum alba latifolia Rumph. Herb. Amb. 3: 99, $t.\ 65$, quoad $f.\ A.$

This may or may not prove to be the correct disposition of the form that Rumphius described, the reduction following Miquel's suggestion. It is at least a representative of the Sapindaceae.

DODONAEA Linnaeus

DODONAEA VISCOSA (Linn.) Jacq. Enum. Pl. Carib. (1760) 19.

Ptelea viscosa Linn. Sp. Pl. (1753) 118.

Caryophyllaster litoreus Rumph. rerb. An b.: : 4t. 50.

Amboina, Tandjong martafrons, Robinson Pl. Rumph. Amb. 1, October 16, 1913, along the beach, locally known as chenki laut. The exact form, as determined by Doctor Radlkofer, is Dodonaea viscosa Jacq. var. vulgaris Benth., forma repanda Radlk.

The reduction of Caryophyllus litoreus to Ptelea viscosa Linn. was first made by Linnaeus, in Stickman Herb. Amb. (1754) 17, Amoen. Acad. 4 (1759) 127, Syst. ed. 10 (1759) 898, Sp. Pl. ed. 2 (1762) 173, and transferred to Dodonaea as D. viscosa Linn., Mant. 2 (1771) 228, eleven years after Jacquin made the same transfer. Other names given by Hasskarl, Neue Schlüssel (1866) 83, are Dodonaea burmanniana DC., D. dioica Roxb., D. triquetra Andr., and D. angustifolia Blanco, all of which are apparently synonyms of Dodonaea viscosa Jacq.

HARPULLIA Roxburgh

HARPULLIA ARBOREA (Blanco) Radlk. in Sitzb. Math.-Phys. Akad. Muench. 16 (1886) 404.

Ptelea arborea Blanco Fl. Filip. (1837) 63.

Metrosideros molucca fungosa Rumph. Herb. Amb. 3: 25.

AMBOINA, Hitoe lama, Robinson Pl. Rumph. Amb. 4, November 4, 1913, in forests at an altitude of about 50 meters, locally known as samar ayer. A form with larger leaflets, and, for the species, rather large fruits, is represented by Rel. Robins. 1601, from Hitoe messen, October 10, 1913, growing on forested limestone hills at an altitude of about 150 meters.

The identification has been made chiefly from the native name cited by Rumphius, that is, samar ayer, which also appears on one of the specimens cited above. The description given by Rumphius is entirely inadequate to warrant an identification of the form from it alone. It is to be noted, however, that the other two species described under the heading Metrosideros molucca by Rumphius have nothing to do with Harpullia, but one is Homalium foetidum Benth. and the other is indeterminable.

BALSAMINACEAE

IMPATIENS Linnaeus

IMPATIENS BALSAMINA Linn. Sp. Pl. (1753) 938.

Lacca herba Rumph. Herb. Amb. 5: 256, t. 90.

Amboina, Binting, Robinson Pl. Rumph. Amb. 70, September 27, 1913. Lacca herba was reduced to Impatiens balsamina Linn. by

Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4

(1759) 130, Syst. ed. 10 (1759) 1239, Sp. Pl. ed. 2 (1763) 1328, which is certainly the correct disposition of it, and which has been very generally followed by later authors. I consider that all of the forms indicated by Rumphius, I coccinea, II purpurea, III alba, and IV e Sina, are merely color forms of the widely distributed and variable species. They have been referred by various authors to Impatiens coccinea Sims, Balsamina fasciculata DC., B. tilo DC., and B. hortensis Desp.*

RHAMNACEAE

ZIZYPHUS Linnaeus

ZIZYPHUS JUJUBA Lam. Encycl. 3 (1789) 318.

Rhamnus jujuba Linn. Sp. Pl. (1753) 194.

Malum indicum Rumph. Herb. Amb. 2: 117, t. 36.

Amboina, Binting, Robinson Pl. Rumph. Amb. 267, November 18, 1913, from cultivated trees, locally known as v'idara.

This was reduced by Linnaeus to his Rhamnus jujuba, in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 121, Sp. Pl. ed. 2 (1762) 282, in which he was followed by other authors until Lamarck transferred Rhamnus jujuba to Zizyphus, where it properly belongs. All authors who have cited Rumphius since Lamarck, refer it to Zizyphus jujuba (Linn.) Lam. Skeels, U. S. Dept. Agr. Bur. Pl. Ind. Bull. 208 (1911) 67, considers that Zizphus jujuba Lam. is invalidated by Z. jujuba Mill., Gard. Dict. (1768), and proposes to adopt for the plant commonly known as Zizyphus jujuba Lam. the name Z. mauritiana Lam. Judging from the data given by Rumphius, the three forms mentioned by him on page 118 as coming from Timor and Java are merely slight variants of this common and widely distributed species.

COLUBRINA † Richard

COLUBRINA ASIATICA (Linn.) Brongn. in Ann. Sci. Nat. I 10 (1827) 369.

Ceanothus asiaticus Linn. Sp. Pl. (1753) 196.

Amara litorea Rumph. Herb. Amb. 5: 74, t. 39, f. 2.

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 269, October 29, 1913, in thickets back of the beach, and at Ayer putre in similar habitat, August 23, 1913.

Amara litorea Rumph. has not previously been properly reduced. The figure is a good representation of this common and widely distributed Indo-Malayan strand plant. Suggested re-

^{*} See Hasskarl, Neue Schlüssel (1866) 118.

[†] Retained name, Vienna Code; Marcorella Neck. (1790) is older.

ductions by other authors have been *Croton* sp., by Burman f., ex Hasskarl, Neue Schlüssel (1866) 96; some aurantiaceous plant, after Poiret, Hasskarl, l. c.; and Teysmann's suggestion to Hasskarl that it was *Zizyphus timoriensis* DC.

VENTILAGO Gaertner

VENTILAGO sp.

Funis viminalis Rumph. Herb. Amb. 5: 3, t. 2.

Nothing that can be referred to the plant that Rumphius figures and describes occurs in our Amboina collections. The plant is manifestly a *Ventilago*, but its status must remain doubtful until more comprehensive collections are made in Amboina. Linnaeus, in Stickman Herb. Amb. (1754) 18, Amoen. Acad. 4 (1759) 128, erroneously referred it to *Securidaca volubilis* Linn., with which, however, it has nothing in common. Willdenow, Sp. Pl. 1 (1797) 1106, reduced it to *Ventilago maderaspatana* Gaertn., in which he has been followed by all subsequent authors who have had occasion to cite the Rumphian figure. It is very improbable, however, that this Moluccan plant is identical with *Ventilago maderaspatana* Gaertn. Possibly it is the same as *Ventilago cernua* Tul., in Ann. Sci. Nat. Bot. IV 8 (1857) 123, which was described from specimens collected by Gaudichaud in Rawak Island, Moluccas.

VITACEAE

AMPELOCISSUS Planchon

AMPELOCISSUS ARACHNOIDEA (Hassk.) Planch. in DC. Monog. Phan. 5 (1887) 375.

Cissus arachnoidea Hassk. Cat. Hort. Bogor. (1844) 166.

Cissus blumeana Hassk. in Flora 25 (1842) Beibl. 39, non Span., nec Steud.

Ampelopsis indica Blume Bijdr. (1825) 193, non Ampelocissus indica Planch.

Labrusca molucca Rumph. Herb. Amb. 5: 452, t. 167.

This rather characteristic species is not represented in our Amboina collections. The figure and the description, however, apply closely to Ampelocissus arachnoidea (Hassk.) Planch. and, for that matter, also to Ampelocissus martini Planch., which must be very closely allied to the former. Koorders, Exkurs. Fl. Java 2 (1912) 557, seems first to have made this reduction of Labrusca molucca Rumph., which is manifestly the correct disposition of it. Linnaeus, in Stickman Herb. Amb. (1754) 24, Syst. ed. 10 (1759) 942, erroneously referred it to Vitis indica Linn. and again, with even greater error, placed it under Vitis trifolia Linn., in Amoen. Acad. 4 (1759) 133. Loureiro, Fl. Cochinch. (1790)

VITACEAE 343

155, referred it to *Vitis labrusca* Linn., but the Cochin-China form he described under the Linnean name was probably *Ampelocissus martini* Planch. or *A. arachnoidea* Planch.

CISSUS Linnaeus

CISSUS QUADRANGULARIS Linn. Mant. 1 (1767) 39.

Vitis quadrangularis Wall. Cat. (1832) no. 5992.

Funis quadrangularis Rumph. Herb. Amb. 5: 83, t. 44, f. 2.

This characteristic species is not represented in our Amboina collections; it is, however, of local occurrence in many parts of Malaya, apparently here an introduced plant. Linnaeus cites the Rumphian name, Funis quadrangularis, Sp. Pl. ed. 2 (1763) 1468, as a synonym of Menispermum crispum Linn., an error for Funis felleus Rumph., as the illustration indicated is t. 44, f. 1, which is a Tinospora. In the original description of Cissus quadrangularis Linn., Funis quadrangularis Rumph. is cited as a synonym, this reduction certainly being the correct disposition of it. Most authors have quoted the Rumphian name and figure under Cissus quadrangularis Linn., a few under its synonym Vitis quadrangularis Wall.

CISSUS REPENS Lam. Encycl. 1 (1783) 31.

Cissus cordata Roxb. Hort. Beng. (1814) 11, nomen nudum, Fl. Ind. ed. 2, 1 (1832) 407.

Vitis repens W. & A. Prodr. (1834) 125.

Funis crepitans I major Rumph. Herb. Amb. 5: 446, t. 164, f. 1.

AMBOINA, Eri, Robinson Pl. Rumph. Amb. 215, September 23, 1913, in thickets near the seashore, locally known as bunga tangong.

Through confusion of Vitis alba Rumph, with t. 164, f. 1, Linnaeus originally reduced the above figure to Bryonia cordifolia Linn., in Stickman Herb. Amb. (1754) 24; it is manifest that he intended to cite t. 166, both here and in Amoen. Acad. 4 (1759) 133. In the second edition of the Species Plantarum (1762) 170. he erroneously reduced Funis crepitans Rumph, to Vitis vitiginea Linn. Vahl, Symb. 3 (1794) 18, places it under Cissus latifolia Vahl, of which, however, it is not the type; Murray, Syst. (1774) 133, places it under Cissus sicyoides Linn., where it certainly does not belong; Willdenow, Sp. Pl. 1² (1797) 656, places it under Cissus latifolia Lam.; and finally Roxburgh, Fl. Ind. ed. 2, 1 (1832) 407, places it under Cissus cordata Roxb., an exact synonym of Cissus repens Lam. Cissus repens Lam. was based on Neriam pulli Rheed., Hort. Malabar. 7: t. 48, and the form figured by Rheede appears to me to be specifically identical with the form figured by Rumphius as Funis crepitans I major and illustrated by the specimen cited above.

CISSUS ARISTATA Blume Bijdr. (1824) 183.

Oculus astaci Rumph. Herb. Amb. 5: 479, t. 178, f. 1.

AMBOINA, Paso, Waë, and Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 228, 229, 230, October and November, 1913, in thickets, sea level to an altitude of about 225 meters, locally known as siri barat.

The identification of these specimens with Oculus astaci Rumph, is probably correct, although the stems, as presented by herbarium material, are not quadrangular, yet some of the branchlets are distinctly so. Hasskarl, Neue Schlüssel (1866) 149, referred it to Cissus glauca Roxb., which is supposed to be a synonym of Cissus repens Lam. Cissus aristata Blume has been reduced by Miquel and by Planchon to Cissus adnata Roxb., Fl. Ind. 1 (1820) 423, a species originally described from Indian material. The Amboina material seems to present some of the characters of Cissus assamica Craib, which like C. adnata Roxb. is widely distributed in the Indo-Malavan region, but its indumentum is of the adnata type. It is possible that the material should be referred to Cissus adnata Roxb, rather than to C. aristata Blume, but without access to the original material on which the various species were based, it is difficult to determine their exact relationships. The closely allied species involved are Cissus adnata Roxb., C. assamica Craib, C. aristata Blume, C. rotundifolia Blume (C. blumeana Steud.), and Cissus pyrrhodasys Mig., the last apparently being identical with Cissus assamica Craib var. pilosissima Gagnep., Not. Syst. 1 (1911) 353.

VITIS QUADRICORNUTA Miq. Ann. Mus. Bot. Lugd. Bat. 1 (1863) 85. Funis crepitans II minor Rumph. Herb. Amb. 5: 446, t. 164, f. 2.

This form is not represented in our Amboina collections. It may be a variety of Cissus repens Lam., or it may be a closely allied form worthy of specific rank. Planchon, DC. Monog. Phan. 5 (1887) 506, repeats Miquel's description, under Cissus repens Lam., with the statement that Vitis diffusa Miq., V. modesta Miq., Vitis metziana Miq., and V. quadricornuta Miq. are either synonyms of Cissus repens Lam. or represent very closely allied species. The reduction of Funis crepitans II minor follows Miquel, but the plant, and for that matter Vitis quadricornuta Miq., is a true Cissus, although the transfer is not here definitely made in view of the uncertain status of the form described by Miquel.

cissus sp.?

Funis crepitans IV Rumph. Herb. Amb. 5: 447.

Loureiro, Fl. Cochinch. (1790) 83, cites this as a synonym of Cissus trifoliata Lour., non Linn., a species of entirely uncertain

VITACEAE 345

status. It must be a species of *Columella* or of *Tetrastigma*, if it belongs in the *Vitaceae*, as it probably does. I have not been able to refer to it any of our Amboina specimens, but further exploration of Amboina may yield material that will lead to a more definite determination of its status.

COLUMELLA Loureiro

COLUMELLA GENICULATA (Blume) Merr. in Philip. Journ. Sci. 11 (1916) Bot. 132.

Cissus geniculata Blume Bijdr. (1825) 184.

Cayratia geniculata Gagnep. in Not. Syst. 1 (1911) 345.

Funis crepitans III trifolia Rumph. Herb. Amb. 5: 447, t. 165.

Amboina, Paso, Robinson Pl. Rumph. Amb. 226, October 29, 1913, on trees near the seashore.

The specimen agrees perfectly with Rumphius's description and illustration and is manifestly the species commonly known as *Cissus geniculata* Blume, here called *Columella geniculata* Merr. Lamark, Encycl. 1 (1783) 31, reduced it to *Cissus carnosa* Lam. = *C. trifolia* K. Sch. of which, however, it is not the type. In this erroneous reduction he was followed by all authors who have had occassion to cite the Rumphian illustration; namely, Vahl, Willdenow, Retzius, Poiret, Roemer and Schultes, Pritzel, and Hasskarl.

COLUMELLA TRIFOLIA (Linn.) Merr. in Philip. Journ. Sci. 11 (1916) Bot. 134.

Vitis trifolia Linn. Sp. Pl. (1753) 203.

Cissus carnosa Lam. Encycl. 1 (1783) 31.

Cissus crenata Vahl Symb. 3 (1794) 19.

Cissus acida Murr. Syst. (1774) 133 (type!).

Cissus trifolia K. Sch. in K. Sch. & Hollr. Fl. Kaiser Wilh. Land (1889) 71.

Cayratia carnosa Gagnep. in Not. Syst. 1 (1911) 347.

Folium causonis I album Rumph. Herb. Amb. 5: 450, t. 166, f. 2.

Folium causonis II Rumph. Herb. Amb. 5: 450.

AMBOINA, Batoe merah and Negri lama, Robinson Pl. Rumph. Amb. 227, August and September, 1913, in thickets at low altitudes, locally known as kapiala. The same form is represented by Rel. Robins. 2485, from Boeton, July 13, 1913.

Folium causonis Rumph. was reduced by Linnaeus to Vitis trifolia Linn. in his Systema, ed. 10 (1759) 942, Sp. Pl. ed. 2 (1762) 293, which, as Cissus trifolia K. Sch., or Columella trifolia Merr., is the correct disposition of it. Of the various synonyms cited above it is the type and whole basis of but one, Cissus acida Murr., but is cited as a synonym in the original description of Cissus carnosa Lam. and of Cissus crenata Vahl. Roemer and Schultes, Syst. 3 (1818) 313, thought that it might

represent Cissus trilobata Lam., which is a true Cissus and is known only from India. Miquel, Fl. Ind. Bat. 1 ² (1859) 602, placed it under Cissus cinerea Lam., which is apparently merely a pubescent form of Columella trifolia (Linn.) Merr., and in Ann. Mus. Bot. Lugd.-Bat. 1 (1863) 81 placed it, with doubt, under Vitis geniculata (Blume) Miq.=Columella geniculata Merr., a species that it certainly does not represent. The form described by Rumphius as Folium causonis II rubrum is apparently merely a color variant of Columella trifolia (Linn.) Merr., although Hasskarl, Neue Schlüssel (1866) 145, thought that it might be Vitis geniculata Miq.

Columella Lour., Fl. Cochinch. (1790) 85, has been accepted by me as the proper generic name for this group, although the recognition of it invalidates Columellia Ruiz & Pavon (1794) of the Columelliaceae. I am of the opinion that Gagnepain * was justified in segregating from Cissus as a distinct genus, those forms placed by Planchon in the subgenus Cayratia, differing from him only in the selection of the generic name.

TETRASTIGMA Planchon

TETRASTIGMA sp.

Folium causonis III litoreum Rumph. Herb. Amb. 5: 450.

No Tetrastigma occurs in our Amboina collections, yet from the description given by Rumphius, I have little doubt that the form described as Folium causonis III litoreum is referable to this genus. Hasskarl, Neue Schlüssel (1866) 145, thought that it might be referable to Vitis geniculata Miq. var. grosseserrata Miq.

LEEA Royen

LEEA AEQUATA Linn. Mant. 1 (1767) 124.

Frutex aquosus femina Rumph. Herb. Amb. 4: 103, t. 45.

AMBOINA, Batoe merah, Robinson Pl. Rumph. Amb. 565, July 20, 1913, in rocky soil at low altitudes.

Burman f., Fl. Ind. (1768) 78, erroneously placed this under *Aralia chinensis* Linn. Willdenow, Sp. Pl. 1² (1797) 1177, referred it to *Leea sambucina* Willd., in which he was followed by numerous authors, Persoon, Roxburgh, Roemer and Schultes, Don, Dietrich, and others. Miquel, Ann. Mus. Bot. Lugd. Bat. 1 (1863) 98, reduced it to *Leea aequata* Linn., which is certainly the correct disposition of *Frutex aquosus femina* Rumph. The figure is poor, and from it alone it would be difficult to determine

^{*} Gagnepain, F. Un genre méconnu: classification des Cissus et Cayratia. Not. Syst. 1 (1911) 339-362.

VITACEAE 347

which of several species of *Leea* was intended; but the description is unmistakably that of *Leea aequata* Linn., not of *Leea sambucina* Willd., especially in the description of the leaflets as "superne pilis hirta, inferne arenulosa," "arenulosa" manifestly referring to the numerous glands on the lower surface that are so very characteristic of *Leea aequata* Linn.

LEEA ACULEATA Blume Bijdr. (1825) 197; Miq. Ann. Mus. Bot. Lugd.-Bat. 1 (1863) 99.

Leea spinosa Spreng. Syst. 1 (1825) 670 p. p., quoad cit. "Ins. Molucc."

Leea aculeata Blume var. moluccana Miq. l. c.

Leea serrulata Miq. l. c.

Frutex aquosus mas Rumph. Herb. An.b. 4: 102, t. 44.

Amboina, Mahija and town of Amboina, Robinson Pl. Rumph. Amb. 231, 232, July 23 and August 7, 1913, along river banks and edges of clearings, altitude 7 to 200 meters, locally known as kayu baduri.

The specimens certainly represent Frutex aquosus mas Rumph.; they are also undoubtedly referable to the species described by Blume as Leea aculeata Bl. and later described by Blanco from Philippine material as a distinct species under the same specific The trunk is supplied with short spines, but ordinary herbarium material rarely presents these as the branchlets are nearly always unarmed. Chiefly on account of the spiny stems as depicted by Rumphius, Linnaeus referred Frutex aquosus mas, with doubt, to Aralia chinensis Linn., in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 127, Syst. ed. 10 (1759) 967, Sp. Pl. ed. 2 (1762) 393, in which he was followed by Lamarck, Loureiro, Willdenow, Burman f., and other authors. Kosteletzky, Allg. Med.-Pharm, Fl. 5 (1836) 1981, referred it to Aralia spinosa Linn. De Candolle, Prodr. 4 (1830) 259, expressed the opinion that the Rumphian figure represented a species of Leea. rather than an Aralia; and finally Miquel, Ann. Mus. Bot. Lugd. Bat. 1 (1863) 99, reduced Frutex aguosus mas Rumph, to Leea aculeata Blume, which is apparently the correct disposition of it. C. B. Clarke, Journ. Bot. 10 (1881) 105, expresses the opinion that Frutex aguosus mas Rumph. Herb. Amb. 4: 102, t. 44, does not represent Leea aculeata Blume; but it is apparent that he misinterpreted Blume's species, because he puts it in the section with red flowers, while in Leea aculeata Blume the flowers are greenish-white or white. The name Leea spinosa Spreng. is properly a synonym of Aralia chinensis Linn.; Sprengel apparently intended to refer here only the Amboina reference from Rumphius, but does not so state. Following the short description he merely cites "Ins. Molucc. China (Aralia chinensis L.)."

ELAEOCARPACEAE

ELAEOCARPUS Linnaeus

Five or six species of *Elaeocarpus* are described by Rumphius under various names, such as *Blimbingum sylvestre* Rumph., *Ganitrus*, *Ganitrum oblongum*, *Lignum momentaneum*, and *Arbor rediviva*; while Hasskarl, Neue Schüssel (1866) 49, 50, suggests that *Sicchius femina* Rumph. Herb. Amb. 3: 41, t. 22, and *Carbonaria femina* Rumph., l. c. 53, may be species of *Elaeocarpus*. The last is certainly not referable to the genus.

Five species of this genus have been described from Amboina. These are Elaeocarpus oppositifolius (DC.) Miq. and E. fruticosus Roxb. (from the Moluccas, probably from Amboina), both very imperfectly described, indicated as having opposite leaves, and certainly the same as E. edulis T. & B.; E moluccanus Scheff.; and E. treubii Hochr. The last two were described from specimens cultivated in the botanic garden at Buitenzorg, Java, and E. treubii Hochr. may not have originated in Amboina. The Robinson collection presents three species, one of which is certainly the same as Elaeocarpus edulis T. & B. and with equal certainty is the same as Blimbingum sylvestre Rumph., but the other two I cannot definitely refer to any described species. While both have doubtfully been referred to forms figured and described by Rumphius, the identity of neither with the Rumphian plants can be considered certain.

ELAEOCARPUS OPPOSITIFOLIUS (DC.) Miq. Fl. Ind. Bat. 12 (1858) 211.

Aceratium oppositifolium DC. Prodr. 1 (1824) 519.

Elaeocarpus fruticosus Roxb. Fl. Ind. ed. 2, 2 (1832) 600.

Elaeocarpus excavatus Reinw. ex Koord. in Lorenz Nova Guinea 8 (1907) 174.

Blimbingum sylvestre Rumph. Herb. Amb. 4: 138, t. 73.

Amboina, Negri lama, Robinson Pl. Rumph. Amb. 372, September 8, 1913; Way tommo, Robinson Pl. Rumph. Amb. 373, August 17, 1913, Pl. Rumph. Amb. 190, July 23, 1913 (detached mature fruits only), river banks, altitude 15 to 40 meters.

Loureiro, Fl. Cochinch. (1790) 69, was entirely wrong in referring Blimbingum sylvestre of Rumphius to his new genus and species, Cylindria rubra. The genus is of entirely uncertain status, has nothing to do with Elaeocarpus, and must be interpreted from Cochin-China material. Elaecarpus edulis Teysm. & Binn. was based on Amboina specimens, but these authors do not indicate the identity of Blimbingum sylvestre with their species. The actual specimens, cited above, agree with Rumphius's dscription and rather poor figure and bear the native name

tagorela: the Amboinese name cited by Rumphius is tagorela abbal. The mature fruits are red, about 4 cm long, 2 cm wide, 3-angled, apex acute or acuminate, the pericarp rather peculiarly produced at the base, giving the fruit the truncate appearance represented in Rumphius's figure. Teysmann gave the native names as bliembieng-oetan, tagorela, and kakarja. of Aceratium oppositifolium DC, was from Amboina, and the description conforms with the characters of the species commonly known as Elaeocarpus edulis T. & B., the type of which was also from Amboina. The type of Elaeocarpus oppositifolius Roxb. was from the Moluccas, very likely from Amboina, and Roxburgh's short description also conforms with Elaeocarpus edulis T. & B. Elaeocarpus excavatus Reinw., a herbarium name published by Koorders, was also based on an Amboina speci-The species is in cultivation in the botanic garden, Buitenzorg, Java, and occurs also in New Guinea.

ELAEOCARPUS RUMPHII sp. nov. § Monocera.

Arbor rediviva Rumph. Herb. Amb. 3: 165, t. 104?

AMBOINA, between Soja and Hatalai and at Hitoe messen, Robinson Pl. Rumph. Amb. 370 (type), October 24 and November 1, 1913, in forests, altitude 175 to 350 meters.

Arbor circiter 12 m alta, inflorescentiis exceptis glabra; foliis oblongis, coriaceis, longe petiolatis, usque ad 20 cm longis, obscure obtuse acuminatis, basi rotundatis vel leviter cordatis, margine obscure crenatis, nervis utrinque 8 ad 10, prominentibus; racemis numerosis, pubescentibus, floribus longe pedicellatis, sepalis lanceleolatis, pubescentibus, circiter 10 mm longis, petalis sepalis aequantibus, intus densissime retrose hirsutis, apice subacutis leviter parce lobatis haud fimbriatis.

A tree about 12 m high, quite glabrous except the inflorescence. Branches reddish-brown, terete, smooth, the ultimate ones 6 to 8 mm in diameter. Leaves alternate, coriaceous, green and shining when dry, 15 to 20 cm long, 5 to 7.5 cm wide, gradually narrowed upward to the obscurely blunt-acuminate apex, the base rather broad, somewhat abruptly rounded or slightly cordate, margins distantly and rather obscurely crenate; lateral nerves 8 to 10 on each side of the midrib, prominent, anastomosing, the primary reticulations slender, subparallel, the ultimate ones rather close, distinct, the whole lower surface with scattered, minute dark-colored, roundish glands or gland-like bodies; petioles reddish-brown, 6 to 7 cm long. Racemes axillary, about 15 cm long, uniformly pubescent with short, grayish hairs as are the pedicels and sepals. Pedicels about 1.5 cm long.

Sepals 5, lanceolate, about 10 mm long, 3 mm wide, narrowed upward, subacute. Petals as long as the sepals, oblong-lanceolate, outside densely pubescent with pale-brownish, shining, appressed hairs, inside uniformly and densely hirsute with reflexed hairs, the apical 2 mm cut into few narrow lobes, usually two lateral slender ones on each side with a central somewhat stouter one. Stamens about 45, the filaments scabrid, 2 to 2.5 mm long; anthers linear, scabrid, 4.5 to 5 mm long including the slender 1 to 1.5 mm long awn that terminates one cell. Ovary ovoid, densely pubescent, 2-celled; style 4 to 5 mm long, pubescent below.

It is by no means certain that this is *Arbor rediviva* of Rumphius, although the plant figured and described by Rumphius is manifestly an *Elaeocarpus*. In the species above described the leaves are larger than in *Arbor rediviva*, rounded or cordate at the base, not acute, and do not present the peculiar protuberances (galls?) shown by Rumphius. It was by Loureiro, Fl. Cochinch. (1790) 663, referred to *Dicalyx cochinchinensis* Lour., but this is a species of *Symplocos* and judging from the description is entirely different from *Arbor rediviva* Rumph.

ELAEOCARPUS AMBOINENSIS sp. nov. § Ganitrus.

Ganitrus Rumph. Herb. Amb. 3: 160, t. 101?

Amboina, Paso, near the coast, $Robinson\ Pl.\ Rumph.\ Amb.\ 371$ (type), November, 25, 1913.

Arbor circiter 12 m alta partibus junioribus inflorescentiisque parce pubescentibus exceptis glabra; foliis alternis, anguste oblongis, chartaceis, nitidis, usque ad 15 cm longis, utrinque subaequaliter angustatis, basi acutis, apice obtusis, margine crenulatis, nervis utrinque circiter 13, prominentibus; racemis e ramis defoliatis, tenuibus, 10 ad 12 cm longis; floribus numerosis, tenuiter pedicellatis, sepalis anguste lanceolatis, acuminatis, parcissime pubescentibus, circiter 11 mm longis, petalis aequilongis, oblongo-lanceolatis, apice usque ad $\frac{2}{5}$ fissis, basi ad margine dense puberulis exceptis glabris; ovario 5-loculare.

A tree about 12 m high, glabrous except the slightly appressed-pubescent younger parts and inflorescence. Branches terete, reddish-brown, glabrous, the younger ones somewhat angled, brownish-olivaceous, minutely and rather sparingly pubescent. Leaves alternate, narrowly oblong, firmly chartaceous, subolivaceous, of about the same color on both surfaces and shining when dry, 12 to 15 cm long, 3 to 5 cm wide, subequally narrowed to the acute base and to the blunt apex, the tip sometimes slightly retuse and minutely apiculate, margins distinctly crenulate; lateral

nerves about 13 on each side of the midrib, slender but prominent, curved, anastomosing, the reticulations distinct; petioles slender, about 1 cm long, the younger ones slightly pubescent. Racemes numerous, solitary, spreading, from the branches below the leaves in the axils of fallen leaves, 10 to 12 cm long, slender, the rachis and pedicels more or less pubescent with short, appressed, palegray hairs. Flowers 20 to 25 or more in each raceme, the buds lanceolate, acuminate, whitish when fresh, brown when dry, the opened flowers greenish, the pedicels slender, about 1.5 cm long. Sepal 5, narrowly lanceolate, acuminate, externally slightly pubescent, about 11 mm long, 2 to 2.5 mm wide. Petals as long as the sepals, oblong-lanceolate, the upper two-fifths cut into from 15 to 20 slender fimbriae, these united into 5 or 6 primary divisions, quite glabrous except the densely pubescent or puberulent margins in the lower part. Stamens about 50, the filaments slender, scabrid, 1 to 1.5 mm long; anthers linear, 5 to 6 mm long including the slender, solitary, bristle-like, 1 mm long awn that tips one of the cells. Ovary ovoid, densely pubescent, somewhat sulcate, 5-celled; style 5 to 6 mm long, pubescent below.

This species is very closely allied to the Philippine *Elaeocarpus dolichopetalus* Merr., from which it is distinguished by its blunt, not acuminate leaves, its longer racemes, longer pedicels, and smaller flowers.

It is by no means certain that it is the same as *Ganitrus* of Rumphius. The figure of *Ganitrus* presents relatively shorter, fewer-nerved, rather differently shaped leaves, and relatively shorter, fewer-flowered racemes. It was apparently drawn from Amboina specimens, although Rumphius includes in the description specimens from other parts of the Malay Archipelago.

Historically, Ganitrus was first reduced by Linnaeus to his Elaeocarpus serratus, in Stickman Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 124, Syst. ed. 10 (1759) 1075, Sp. Pl. ed. 2 (1762) 734, in which he was followed by Burman f., Loureiro, Willdenow, and Lamarck. However, Elaeocarpus serratus Linn., Sp. Pl. (1753) 515, was based on Indian and Ceylon plants, and has nothing to do with the plant described by Rumphius. Gaertner, Fruct. 2 (1791) 271, t. 139, f. 6, takes his generic name Ganitrus from Rumphius, and refers to Ganitrus sphaerica Gaertn. the figure and description of Rumphius mentioned above. Gaertner's description was from an actual specimen, and his species must be interpreted from the material described. Gaertner's species is probably the same as the one later described by Roxburgh as Elaeocarpus ganitrus Roxb., Fl. Ind. ed. 2, 2 (1832) 592, who refers to his species the Rumphian plant and takes his specific

name from Rumphius. However, the species actually described by Roxburgh was based on Indian material and manifestly is not the Rumphian plant. The proper name for this Indian species is apparently *Elaeocarpus sphaericus* (Gaertn.) K. Sch. (E. ganitrus Roxb., non Ganitrus Rumph.). The species described above should be compared critically with *Elaeocarpus angustifolius* Blume (Aceratium ganitri Hassk.), to which it is manifestly allied.

ELAEOCARPUS OBLONGUS Gaertn. Fruct. 1 (1791) 202, t. 43, f. 3. Ganitrum oblongum Rumph. Herb. Amb. 3: 163, t. 102?

This species is not represented in our Amboina collections. Rumphius states that the form he described was found in Amboina, Celebes, and Bali. Gaertner placed it under Elaeocarpus oblongus in the original description of that species, but I have no means of determining whether or not the specimens he had before him were identical with the form Rumphius described and figured. He does not state the origin of his material. Lamarck, Encycl. 2 (1788) 604, referred it tentatively to Elaeocarpus integrifolius Lam., but his type was from the Isle of France and is certainly not the same as the Moluccan form. Willdenow, Sp. Pl. 2² (1799) 1170, followed Lamarck in his disposition of it. Hasskarl, Neue Schlüssel (1866) 62, suggests that it is Elaeocarpus macrophyllus Blume, which is very improbable. Pending a critical revision of the genus or at least of the Indo-Malayan species, it seems best to leave it under Elaeocarpus oblongus Gaertn. I have seen no authentic species of Gaertner's species, do not know of what country it is a native, and strongly suspect that current interpretations of it are merely approximate; perhaps the modern conception of the species is based more on Rumphius's figure than on Gaertner's actual specimens.

ELAEOCARPUS sp.?

Lignum momentaneum Rumph. Herb. Amb. 3: 164, t. 103.

This reduction is suggested by Hasskarl, Neue Schlüssel (1866) 62, following Savigny's note in Lamarck, Encycl. 4 (1798) 693, under the Rumphian name pagamat. There is little in the description or in the figure to indicate an Elaeocarpus, and if the infructescence is drawn correctly, it certainly is not a representative of this genus, although Rumphius compares the fruits with his Ganitrus, which is an Elaeocarpus. Its status should be determinable from continued field work in Amboina, as Rumphius states that it was common in the Moluccas and cites the native names pagamatta and pegang matta for Amboina and sal for Ternate.

GONYSTYLACEAE

GONYSTYLUS Teysmann and Binnendyck

GONYSTYLUS BANCANUS (Miq.) Baill. ex Hook. f. & Jackson Index Kewensis 2 (1895) 1055.

Aquilaria bancana Miq. Fl. Ind. Bat. Suppl. (1860) 141, 355. Gonystylus miquelianus T. & B. in Bot. Zeit. 20 (1862) 265. Agallochum spurium Rumph. Herb. Amb. 2: 40.

Teysmann and Binnendyck reduced Agallochum spurium Rumph. to Gonystylus miquelianus T. & B., in Miq. Ann. Mus. Bot. Lugd. Bat. 1 (1864) 133, where the species is minutely described and figured. It is impossible definitely to determine from Rumphius's description whether the plant he had in mind was G. bancanus Baill. or was one of the other species of the genus. The fact that a portion of his material came from Borneo leads one to suspect that he may have had one of the Bornean species, G. affinis Radlk., G. borneensis Gilg, G. pluricornis Radlk., or G. calophyllus Gilg.

Agallochum spurium album Rumph., very briefly described in this chapter, is indeterminable from any data at present available. Agallochum spurium III, merely mentioned, is *Excoecaria agallocha* Linn., later described and figured by Rumphius, Herb. Amb. 2: 237, t. 79, 80 (see p. 327).

TILIACEAE

CORCHORUS Linnaeus

CORCHORUS CAPSULARIS Linn. Sp. Pl. (1753) 529.

Ganga sativa Rumph. Herb. Amb. 5: 212, t. 78, f. 1.

This spcies is not represented in our Amboina collections, but Rumphius's figure is unmistakably *Corchorus capsularis* Linn. It was first reduced by Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1079, all later authors concurring in this reduction.

CORCHORUS OLITORIUS Linn. Sp. Pl. (1753) 529.

Ganga agrestis Rumph. Herb. Amb. 5: 213 (haud t. 78, f. 2).

This species is not represented in the Amboina collections. The description is unmistakably that of *Corchorus olitorius* Linn. The figure, however, is certainly no *Corchorus*, but I am unable to suggest what species was intended; it does not agree at all with the description in either its leaf or its fruit characters. The figure was referred by Linnaeus to *Corchorus olitorius* in Stickman, Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130.

COLUMBIA Persoon

COLUMBIA SUBOBOVATA Hochr. Pl. Bogor. Exsicc. (1904) 25.

Restiaria nigra Rumph. Herb. Amb. 3: 188.

Perticaria tertia Rumph. Herb. Amb. 3: 189, t. 120.

Perticaria tertia latifolia Rumph. Herb. Amb. 3: 189.

AMBOINA, Negri lama, Robinson Pl. Rumph. Amb. 279, September 8, 1913, in light woods, altitude 10 meters, locally known as hunot; Amboina (town), Robinson Pl. Rumph. Amb. 278, July 30, 1913, river sides at 5 meters altitude, locally known as morong itam; Paso, Robinson Pl. Rumph. Amb. 280, near the seashore, October 29, 1913, locally known as morong mera and hunut puti.

There is very little doubt that the three Rumphian descriptions, cited above, represent the same species, and that all are Columbia (Diplophractum) subobovata Hochr. The species presents great variation in its vegetative characters, the leaves varying from 8 to 35 cm in length and from 5 to 18 cm in width, all intermediate sizes being found on the same specimen. Likewise the leaf bases on the same specimen vary from perfectly equilateral to strongly inequilateral. The figure given by Rumphius for Perticaria tertia is very poor, and one would never suspect that it was intended for a species of Columbia. description, however, is unmistakable. Loureiro, Fl. Cochinch. (1790) 639, referred, with doubt, Restiaria nigra Rumph., Herb. Amb. 3: 188, to Restiaria cordata Lour. Loureiro's species, however, is supposed to be an *Uncaria*, is certainly not the same as the Rumphian one, and must be interpreted from Cochin-China The proper disposition of Perticaria has not before been indicated.*

TRIUMFETTA Linnaeus

TRIUMFETTA BARTRAMIA Linn. Syst. ed. 10 (1759) 1044.

Triumfetta rhomboidea Jacq. Enum. Pl. Carib. (1762) 22, Stirp. Am. Hist. (1763) 147, t. 90.

Lappago amboinica sylvestris Rumph. Herb. Amb. 6: 60 (haud t. 25, f. 2).

AMBOINA, town of Amboina and Gelala, Robinson Pl. Rumph. Amb. 277, August, 1913, along the beach and in waste places at low altitudes.

Lappago amboinica Rumph. Herb. Amb. 6: 59, t. 25, f. 2, is certainly *Urena lobata* Linn. The figure is poor, but the drawing of the fruits and the description are unmistakably *Urena*, while the drawing of the flowers on the same plant are likewise

^{*}For a further discussion of the status of *Restiaria nigra* Rumph. see *Trichospermum quadrivalve* Merr. in Philip. Journ. Sci. 11 (1916) Bot. 289.

unmistakably those of *Triumfetta*. The figure has by some authors been referred to *Urena*, by others to *Triumfetta*. The description of *Lappago amboinica sylvestris* is certainly that of a *Triumfetta*. Hasskarl, Neue Schlüssel (1866) 163, has referred it to *Triumfetta rotundifolia* Lam., but Lamarck's species is Indian not Malayan.

The oldest name for this species is Bartramia indica Linn. Sp. Pl. (1753) 389, but the specific name is invalidated in Triumfetta by Triumfetta indica Lam. Triumfetta bartramia Linn. was based on Bartramia indica Linn. Sp. Pl. (1753) 389, with the addition of a reference to "Rumph. Amb. 3: t. 119," which is Commersonia bartramia (Linn.) Merr. I interpret the type of Bartramia indica Linn. as Fl. Zeyl. 174, which according to Thwaites, Fl. Ceyl. 1 (1893) 180, is Triumfetta rhomboidea Jacq., who also states that:

The name T. Bartramia has priority (1762), but Linnaeus may have included in it more than T. rhomboidea Jacq. as now understood.

MALVACEAE

ABUTILON Tournefort

ABUTILON INDICUM (Linn.) Sweet Hort. Brit. (1827) 54.

Sida indica Linn. Cent. Pl. 2 (1756) 26, Amoen. Acad. 4 (1759) 324.

Abutilon laeve Rumph. Herb. Amb. 4: 31, t. 11.

This species is not represented in our Amboina collections, but Rel. Robins. 2518 from Boeleleng, Bali, is Abutilon indicum Sweet. Abutilon laeve Rumph. was originally considered by Linnaeus to represent a variety of Sida abutilon Linn., in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 125. It was first reduced to Sida indica Linn. by Loureiro, Fl. Cochinch. (1790) 414, which as Abutilon indicum (Linn.) Sweet is certainly the correct disposition of it. By some authors it is considered to represent Sida indica Sweet var. populifolia (Lam.) Mast. in Hook. f. Fl. Brit. Ind. 1 (1874) 326, while Roxburgh, Fl. Ind. ed. 2, 3 (1832) 178, erroneously placed it under Sida abutilon Linn.—Abutilon avicennae Gaertn.

ABUTILON HIRTUM (Lam.) Sweet Hort. Brit. (1827) 53.

Sida hirta Lam. Encycl. 1 (1783) 7. Sida pilosa L'Hérit. Stirp. (1784-85) 130.

Abutilon hirsutum Rumph. Herb. Amb. 4: 29, t. 10.

This species is not represented in our Amboina collections. The Rumphian description and plate were cited by Lamarck in the original description of *Sida hirta*, but the actual type of the species was a plant collected by Sonnerat. Linnaeus originally considered the plate to represent a variety of *Sida abutilon* Linn., in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 125; while Burman f., Henschel, and Murray erroneously placed it under *Sida asiatica* Linn. By other authors it has been placed under *Abutilon graveolens* Wight & Arn. (*Sida graveolens* Roxb.), to which *Abutilon hirtum* has been reduced as a variety,* but even if varietal forms be recognized, the specific name, *hirtum*, being much older, should be retained.

Abutilon litoreum Rumph. Herb. Amb. 4: 33, briefly described in the same chapter with Abutilon laeve=Abutilon indicum Sweet, was thought by Hasskarl, Neue Schlüssel (1866) 73, possibly to represent Abutilon albescens Miq. This suggested reduction of Abutilon litoreum is possibly correct, but the definite identification of the form described by Rumphius must await further botanical exploration of the Moluccas. The plant is undoubtedly an Abutilon and may be a form of A. indicum Sweet.

SIDA Linnaeus

SIDA ACUTA Burm. f. Fl. Ind. (1768) 147.

Sida carpinifolia Linn. f. Suppl. (1781) 307. Sida scoparia Lour. Fl. Cochinch. (1790) 414.

Sigalurium II longifolium Rumph. Herb. Amb. 6: 45, t. 18, f. 2.

Amboina, Lateri, Robinson Pl. Rumph. Amb. 500, August 25, 1913, altitude about 100 meters.

The figure given by Rumphius is unmistakably *Sida acuta* Burm. f., and Burman f. cites it in the original publication of his species, although his description is based primarily on actual specimens. Linnaeus erroneously referred it to *Sida spinosa* Linn., in Stickman, Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 1145. Loureiro, Fl. Cochinch. (1790) 414, cites it as representing his *Sida scoparia*. Most recent authors have followed Burman f., which is certainly the correct disposition of *Sigalurium longifolium*.

SIDA RETUSA Linn. Sp. Pl. ed. 2 (1763) 961.

Sigalurium I rotundum s. vulgare Rumph. Herb. Amb. 6: 44, t. 19.

This species is not represented in our Amboina collections. The figure is unmistakably *Sida retusa* Linn., and it is cited in the original description of that species, although it is not the type. It was originally reduced by Linnaeus to *Sida alnifolia* Linn., in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4

^{*} Masters in Hook. f. Fl. Brit. Ind. 1 (1874) 327.

(1759) 134, Syst. ed. 10 (1759) 1145, where it manifestly does not belong.

SIDA CORDIFOLIA Linn. Sp. Pl. (1753) 684.

Abutilon montanum Rumph. Herb. Amb. 4: 32.

This species is not represented in our Amboina collections, but *Rel. Robins. 2512*, from Boeleleng, Bali, is a form of this common and widely distributed species. The reduction of *Abutilon montanum* to *Sida cordifolia* follows Hasskarl, Neue Schlüssel (1866) 73, and is almost certainly the correct disposition of it.

The form from the Cape of Good Hope, indicated by Rumphius, l. c., as Abutilon montanum e Capite bonae spei, suggested by Hasskarl, Neue Schlüssel (1866) 73, as possibly Sida triloba Cav. or S. sonneratiana Cav.=Abutilon sonneratianum Sweet, may be identifiable from a study of the South African Malvaceae in Sida, Abutilon, and other allied genera. It may be one of the species that Hasskarl has indicated, but again it may be quite different from both of these.

SIDA spp.?

Sigalurium rotundum silvestre Rumph. Herb. Amb. 6: 45. Sigalurium III album Rumph. Herb. Amb. 6: 45.

The descriptions are too indefinite to warrant accurate determination of these two forms. Hasskarl, Neue Schlüssel (1866) 160, suggests that the former may be Sida carpinoides DC.=Malvastrum coromandelianum (Linn.) Garcke (M. tricuspidatum G. Gray) and that the latter may be Sida alba Linn., but both of these suggested determinations are probably wrong.

URENA Linnaeus

URENA LOBATA Linn. Sp. Pl. (1753) 692.

Lappago amboinica Rumph. Herb. Amb. 6: 59, t. 25, f. 2.

Amboina, Caju poeti, Robinson Pl. Rumph. Amb. 495, August 2, 1913, roadsides, etc., up to an altitude of 350 meters.

So far as the Rumphian figure and description go, *Urena lobata* includes the forms described as I laciniata and II latifolia, while III silvestris and the drawings of the attached flowers are *Triumfetta bartramia* Linn. (see p. 354). The descriptions quoted above and the figure, excepting the flowers, are unmistakably *Urena lobata* Linn. On account of the mixture of two entirely different species in the drawing, the plate has by some been cited under *Triumfetta*, by others under *Urena*. The plate and description, for the most part, are *Urena lobata* Linn., although originally reduced by Linnaeus, in Stickman Herb. Amb. (1754)

26, Amoen. Acad. 4 (1759) 134, to *Urena sinuata* Linn., but corrected in his Systema, ed. 10 (1759) 1148, to *Urena lobata*. Other names involved in the reduction are *Urena lappago* Sm. and *U. heterophylla* Lam.

ABELMOSCHUS Medikus

ABELMOSCHUS MOSCHATUS Medik. Malv. (1787) 46.

Hibiscus abelmoschus Linn. Sp. Pl. (1753) 696.

Granum moschatum Rumph. Herb. Amb. 4: 38, t. 15.

AMBOINA, Toelehoe, Robinson Pl. Rumph. Amb. 492, November 25, 1913, in grasslands, altitude about 15 meters, locally known as daun kasturi.

The original reduction of *Granum moschatum* to *Hibiscus abelmoschus* Linn. was made by Linnaeus, in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1149, Sp. Pl. ed. 2 (1763) 980, which is certainly the correct disposition of it, although now it is very generally recognized as representing a distinct genus and is classified as *Abelmoschus moschatus* Medik. The Amboina specimen cited above is much more pubescent than the commoner forms of the species, but probably belongs here.

ABELMOSCHUS MINDANAENSIS Warb. in Perk. Frag. Fl. Philip. (1904) 111.

Granum moschatum agreste Rumph. Herb. Amb. 4: 39.

AMBOINA, Way tommo, Robinson Pl. Rumph. Amb. 493, August 17, 1913, along river banks, altitude about 50 meters. Erect, about 1.5 meters high.

Granum moschatum agreste is very briefly described, but the probabilities are that the plant here determined as Abelmoschus mindanaensis Warb. is the one intended by Rumphius. The description given by Rumphius is mainly comparative with Abelmoschus moschatus Medik., a taller, more woody plant than the latter, with which data the cited specimen agrees. It cannot possibly be Abelmoschus ficulneus W. & A. as suggested by Hasskarl, Neue Schlüssel (1866) 74. The Amboina specimen is apparently a perfect match for our Mindanao material that unquestionably represents Warburg's species; it has previously been reported only from Mindanao.

HIBISCUS Linnaeus

HIBISCUS TILIACEUS Linn. Sp. Pl. (1753) 694.

Paritium tiliaceum A. St. Hil. Fl. Bras. Merid. 1 (1825) 256.

Novella Rumph. Herb. Amb. 2: 218, t. 73.

Novella repens Rumph. Herb. Amb. 2: 222.

Novella rubra Rumph. Herb. Amb. 2: 223.

Amboina, Kati-kati, Robinson Pl. Rumph. Amb. 497, October 17, 1913, in cultivated ground, altitude about 80 meters, locally known as baru.

Novella of Rumphius was first reduced to Hibiscus tiliaceus Linn. by Linnaeus, in Stickman Herb. Amb. (1754) 10, Amoen. Acad. 4 (1759) 121, Syst. ed. 10 (1759) 1149, Sp. Pl. ed. 2 (1763) 976, which disposition of it is certainly correct and which has been accepted by practically all authors. The figure is not good. The form described by Rumphius as Novella repens is certainly the form of Hibiscus tiliaceus Linn. with procumbent trunks that is very abundant in some localities, while Novella rubra is also manifestly merely a form of the same species.

HIBISCUS MUTABILIS Linn. Sp. Pl. (1753) 694. Flos horarius Rumph. Herb. Amb. 4: 27, t. 9.

This widely cultivated form is not represented in our Amboina collections. The figure, however, is unmistakably referable to *Hibiscus mutabilis* Linn. and was first reduced to this species by Linnaeus himself, in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 125, Syst. ed. 10 (1759) 1149, Sp. Pl. ed. 2 (1763) 977, in which he has been followed by all authors.

HIBISCUS SURATTENSIS Linn. Sp. Pl. (1753) 696.

Hibiscus convolvulaceus Hassk. in Abh. Naurf. Gesellsch. Halle 9 (1866) 216 (Neue Schlüssel 74) (type!).

Herba crinalium domestica Rumph. Herb. Amb. 4: 40, t. 16.

Herba crinalium silvestris Rumph. l. c. 41.

Amboina, near the town of Amboina, Robinson Pl. Rumph. Amb. 496, August 8, 1913, near the beach.

The original reduction of *Herba crinalium* to *Hibiscus surattensis* Linn. was made by Linnaeus, in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1145, Sp. Pl. ed. 2 (1763) 979, which is certainly the correct disposition of it. This reduction has been followed by all authors. Hasskarl, however, Neue Schlüssel (1866) 74, decided that *Herba crinalium silvestris* represented a distinct species, which he named and described after Rumphius, as *Hibiscus convolvulaceus*, the publication of which has been overlooked by all authors and is not included in Index Kewensis. I consider this to be merely a form of *Hibiscus surattensis* Linn. with narrowly lobed leaves.

HIBISCUS ROSA-SINENSIS Linn. Sp. Pl. (1753) 694.

Flos festalis Rumph. Herb. Amb. 4: 24, t. 8.

This reduction was first made by Linnaeus, in Stickman Herb. Amb. (1754) 15, and the figure was consistently cited by Linnaeus in his subsequent writings; while his reduction, certainly correct, has been followed by all authors. The form figured is the commonly cultivated one with double flowers. The form

described as ruber simplex is the ordinary type with normal red flowers. Other forms described are the one with yellowish double flowers and one with normal, pale or nearly white flowers. This commonly cultivated plant does not occur in our Amboina collections, but is doubtless common in Amboina in cultivation, as it is in all parts of Malaya.

THESPESIA Solander

THESPESIA POPULNEA (Linn.) Soland. ex Corr. in Ann. Mus. Paris 9 (1807) 290.

Hibiscus populneus Linn. Sp. Pl. (1753) 694.

Thespesia macrophylla Blume Bijdr. (1825) 73, 106.

Novella litorea Rumph. Herb. Amb. 2: 224, t. 74.

AMBOINA, Amahoesoe and Binting, Robinson Pl. Rumph. Amb. 498, August and September, 1913, along the strand.

Novella litorea was first reduced by Linnaeus to Hibiscus populneus Linn., in Stickman Herb. Amb. (1754) 10, Amoen. Acad. 4 (1759) 121, Syst. ed. 10 (1759) 1149, Sp. Pl. ed. 2 (1763) 976, which, as Thespesia populnea Soland., seems to be the correct disposition of it. Blume, however, Bijdr. (1825) 73, has proposed Thespesia macrophylla as a distinct species, apparently based wholly on the Rumphian figure and description, and many authors have recognized it as a valid species. Any large series of specimens from the Malayan region presents such relatively great variations in the characters by which the two forms have been distinguished, that I am by no means certain that they are specifically distinct and prefer to retain the Amboina plant under the older name.*

GOSSYPIUM Linnaeus

GOSSYPIUM BRASILIENSE Macf. Fl. Jam. 1 (1837) 72.

Gossypium lapideum Tussac, Fl. Antil. 2 (1818) 67, nomen nudum. Gossypium latifolium Rumph. Herb. Amb. 4: 37, t. 13.

Amboina, Koesoe koesoe sereh, Robinson Pl. Rumph. Amb. 494, August 23, 1913, locally known as kapas.

The Rumphian species was first reduced by Linnaeus to Gossypium arboreum Linn., in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1148, Sp. Pl. ed. 2 (1763) 975, where it certainly does not belong. Lamarck cites it in the original description of Gossypium vitifolium, Encycl. 2 (1786) 135, but Lamarck's type was an actual specimen collected by Sonnerat. Watt, Wild and Cultivated Cotton Plants of the World (1907) 255, leaves the Rumphian name as a syn-

^{*} See Baker in Journ. Bot. 35 (1897) 52.

onym of Lamarck's species, but states that "Rumphius's Celebes plant shows the leaves too deeply 5-lobed (as in *G. brasiliense*) to be typical *G. vitifolium*." Other names involved in the reduction are *Gossypium nigrum* Ham. and *G. indicum* Lam. While the disposition of *Gossypium latifolium* Rumph. as a synonym of *G. brasiliense* Macf. is not certainly the correct one, it is a reasonably safe one for the present.

GOSSYPIUM INDICUM Lam. Encycl. 2 (1786) 134.

Gossypium nanking Meyen Reise 2 (1836) 323. Gossypium Rumph. Herb. Amb. 4: 33, t. 12.

This species is not represented in our Amboina collections. The Rumphian plant was first reduced by Linnaeus to Gossypium herbaceum Linn., in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1148, Sp. Pl. ed. 2 (1763) 975, where it certainly does not belong. Lamarck, Encycl. 2 (1786) 134, cited the Rumphian figure as representing his Gossypium indicum, although the actual type of that species is a specimen collected by Sonnerat. However, Watt considers that Gossypium indicum Lam. is a synonym of G. nanking Meyen, and as Lamarck's specific name is the oldest valid one for the species it is here accepted. Watt, Wild and Cultivated Cotton Plants of the World (1907) 128, definitely refers Rumphius's figure to Gossypium nanking var. nadam Watt. Hasskarl, Neue Schlüssel (1866) 73, interprets the Rumphian description as Gossypium minus and G. majus, considering the tall form described to be Gossypium arboreum Linn.

GOSSYPIUM PURPURASCENS Poir. in Lam. Encycl. Suppl. 2 (1811) 369.

Gossypium floribus fusco-rubentibus Rumph. Herb. Amb. 4: 34.

The reduction merely follows Hasskarl's suggestion. It is probable that it is the correct disposition of the Javan form that Rumphius casually and very briefly describes, but the data given are too few to warrant a certain identification of it.

BOMBACACEAE

DURIO Adanson

DURIO ZIBETHINUS Murr. Syst. (1774) 591.

Durio Rumph. Herb. Amb. 1: 99, t. 29.

Amboina, Batoe gadjah, Robinson Pl. Rumph. Amb. 69, August 5, 1913, from a cultivated tree, locally known as durion.

Durio was reduced to Durio zibethinus by Murray in the original description of the species, the characters being apparently

taken largely, if not wholly, from Rumphius. The three forms briefly described by Rumphius on page 101 may be merely variants of the common durian or some of them may represent distinct species.

CEIBA Medikus

CEIBA PENTANDRA (Linn.) Gaertn. Fruct. 2 (1791) 244, t. 133.

Bombax pentandrum Linn. Sp. Pl. (1753) 511. Eriodendron anfractuosum DC. Prodr. 1 (1824) 479. Gossampinus alba Ham. in Trans. Linn. Soc. 15 (1826) 126. Gossampinus rumphii Schott. & Endl. Meletem. (1832) 35. Eriophorus javana Rumph. Herb. Amb. 1: 194, t. 80.

The common kapoc or silk cotton tree is not represented in our Amboina collections. *Eriophorus javana* Rumph. was first reduced by Linnaeus to *Bombax pentandrum* Linn., in Stickman Herb. Amb. (1754) 8, Amoen. Acad. 4 (1754) 120, Sp. Pl. ed. 2 (1763) 958, but in the Systema, ed. 10 (1759) 1141, it is placed under *Bombax aculeatum* Linn., which may prove to be merely a synonym of *Ceiba pentandra* Gaertn. *Bombax aculeatum* Linn. does not appear in Index Kewensis.

STERCULIACEAE

PENTAPETES Linnaeus

PENTAPETES PHOENICEA Linn. Sp. Pl. (1753) 698.

Flos inpius Rumph. Herb. Amb. 5: 288, t. 100, f. 1.

This well-known species is not represented in our Amboina collections. The Rumphian figure and description are unmistakably the same as *Pentapetes phoenicea* Linn., and Linnaeus himself made the first reduction, in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1150, Sp. Pl. ed. 2 (1763) 958. This reduction has been followed by all subsequent authors.

COMMERSONIA Forster

COMMERSONIA BARTRAMIA (Linn.) comb. nov.

Muntingia bartramia Linn. Amoen. Acad. 4 (1759) 124 (type!). Commersonia echinata Forst. Char. Gen. (1776) 44, t. 22.

Restiaria alba Rumph. Herb. Amb. 3: 187, t. 119.

AMBOINA, Hoenoet and Soja, Robinson Pl. Rumph. Amb. 294, August 2, 1913, in flower, October 18, 1913, in fruit, locally known as marong, morong mera, and hunut. In clearings, altitude 200 to 375 meters.

Restiaria alba Rumph. was reduced by Linnaeus, Amoen. Acad. 4 (1759) 124, to Muntingia bartramia Linn. and is the whole basis of the Linnean species, which has been entirely overlooked.

In the same year Linnaeus, Syst. ed. 10 (1859) 1044, erroneously referred the same figure to *Triumfetta bartramia* Linn. The Rumphian plate and description were reduced to Forster's species by Linnaeus f., Suppl. (1781) 187, and this disposition of it has been accepted by subsequent authors. In this connection botanists generally have recognized *Commersonia echinata* Forst. and *C. platyphylla* Andr. as two distinct species. The latter is hardly more than a form or a variety of the former. Gagnepain, Not. Syst. 1 (1909) 96, in a note regarding the typical form of Forster's species, reduces *Commersonia platyphylla* Andr. to *C. echinata* Forst. var. *platyphylla* (Andr.) Gagnep. Kuntze, Rev. Gen. Pl. 1 (1891) 81, recognizes *Restiaria* Rumph. as the proper generic name for *Commersonia*, but this is inadmissible under the rules of the International Code of Botanical Nomenclature.

HELICTERES Linnaeus

HELICTERES ISORA Linn. Sp. Pl. (1753) 963.

Fructus regis Rumph. Herb. Amb. 7: 32, t. 17, f. 1.

This characteristic species is not represented in our Amboina collections. Burman, in the explanation of the Rumphian figure, p. 33, connects Fructus regis with Helicteres isora Linn., citing not the Linnean binomial, but the diagnostic sentence "Helicteres foliis cordatis, serratis, fructu composito contorto, Linnaei Spec. Plant. pag. 963." This reduction was accepted by Linneaeus, Amoen. Acad. 4 (1759) 136, and manifestly is the correct disposition of Fructus regis. Lamarck, Encycl. 3 (1789) 88, erroneously considered it to represent a variety of his Helicteres ovata, a Brasilian species; while Hasskarl, Pl. Jav. Rar. (1848) 308, Neue Schlüssel (1866) 189, adds Isora corylifolia Schott & Endl., a synonym of Helicteres isora Linn.

KLEINHOVIA Linnaeus

KLEINHOVIA HOSPITA Linn. Sp. Pl. ed. 2 (1763) 1365.

Catti marus Rumph. Herb. Amb. 3: 177, t. 113.

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 292, September 8, 1913, margins of cultivated fields, altitude about 10 meters, locally known as kinar.

Catti marus was cited by Linnaeus in the original description of Kleinhovia hospita, but the type was an actual specimen from Java, collected by Kleinhof; the generic name is corrected by some botanists to Kleinhofia, but the original Linnaeus spelling is here retained. All authors subsequent to Linnaeus who have cited the Rumphian description and figure have followed Linnaeus in the reduction of Catti marus.

STERCULIA Linnaeus

STERCULIA FOETIDA Linn. Sp. Pl. (1753) 1008.

Clompanus molucanus Raf. Sylva Tellur. (1838) 73 (type!). Clompanus major Rumph. Herb. Amb. 3: 168, t. 107.

AMBOINA, Silali, Robinson Pl. Rumph. Amb. 293, in clearings at an altitude of about 150 meters, September 22, 1913.

This reduction, manifestly correct, was first made by Linnaeus, in Stickman Herb. Amb. (1754) 14, Amoen Acad. 4 (1759) 124, Syst. ed. 10 (1759) 1277, Sp. Pl. ed. 2 (1763) 1431, and has generally been accepted by all botanists who have had occasion to cite the Rumphian figure and description. The Rumphian description and figure typify Rafinesque's genus and species *Clompanus molucanus*.

STERCULIA TREUBII Hochr. Pl. Bogor. Exsicc. (1904) 8.
. Clompanus minor Rumph. Herb. Amb. 3: 169, t. 107 bis.

AMBOINA, Lateri, Robinson Pl. Rumph. Amb. 327, August 25, 1913; Amahoesoe, Robinson Pl. Rumph. Amb. 398, August 28, 1913; the former in forests at an altitude of about 250 meters, the latter on coral rocks at an altitude of about 10 meters; locally known as choklat utan and saklat utan; that is, wild chocolate, the seeds being used as a substitute for, or as an adulterant of, chocolate.

Linnaeus reduced this to Sterculia balanghas Linn., in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 124, Syst. ed. 10 (1759) 1277, Sp. Pl. ed. 2 (1763) 1430, and this disposition of the Rumphian plant has been accepted by most authors. However, it manifestly is incorrect, as Sterculia balanghas Linn. is known only from India and Cevlon. Smith placed the Rumphian species under his Sterculia urceolata in the original description of that species, Rees's Cyclop. 34 (1816) no. 3, in which he was followed by de Candolle, Prodr. 1 (1824) 482. material was from Honimoa Island, near Amboina, and his description, a copy of which has kindly been supplied to me by Sir David Prain, does not conform with my interpretation of Clompanus minor Rumph. The specimens cited above appear to be identical with Sterculia treubii Hochr., originally described from trees cultivated in the botanic garden at Buitenzorg, Java, their definite origin being unknown. The Rumphian figure is very poor, and from it alone one would hardly suspect the species described by Rumphius to be even closely allied to Sterculia treubii Hochr. The Rumphian description applies to the specimens much closer than the figure.

Under Clompanus minor several forms are discussed, which probably represent distinct species. These are Clompanus ternatensis femina Rumph. Herb. Amb. 3: 170; C. ternatensis mas Rumph.

l. c., from Ternate; and C. silvestris Rumph. l. c. 171, from Ceram. These are entirely undeterminable from the material and data now available, and their identity must await the results of field work in the two islands mentioned.

ABROMA Jacquin

ABROMA FASTUOSA Jacq. Hort. Vind. 3 (1776) 3, t. 1.

Abroma (Ambroma) augusta Linn. f. Suppl. (1781) 341. Gossypium daemonis Rumph. Herb. Amb. 4: 38, t. 14.

No representative of the genus Abroma occurs in our Amboina collection, yet Gossypium daemonis Rumph. is manifestly an Abroma. Linnaeus, in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 126, erred in reducing it to his Hibiscus zeylanicus. Roxburgh, Fl. Ind. ed. 2, 3 (1832) 156, seems to be the first author to make the reduction to Abroma, by referring it to Abroma augusta Linn. f. The form described by Rumphius is manifestly what is currently named Abroma fastuosa R. Br.; that is, the form with spiny branchlets. Abroma mollis DC., Prodr. 1 (1824) 485, is described from specimens originating in the Moluccas, and is unquestionably the same as the spiny form currently named Abroma fastuosa R. Br. I have adopted the oldest name, Abroma fastuosa Jacq., but if this smooth-stemmed form be really specifically distinct from the form with the spiny stems, some adjustment of the synonymy will be necessary.

HERITIERA Dryander

HERITIERA LITTORALIS Dryand. in Ait. Hort. Kew. 3 (1789) 546.

Atunus litorea Rumph. Herb. Amb. 3: 95, t. 63.

This common and widely distributed strand plant is not represented in our Amboina collections. The reduction was first suggested by Lamarck, Encycl. 4 (1797) 228, and has generally been accepted by subsequent authors. Roxburgh, Fl. Ind. ed. 2, 3 (1832) 142, erroneously reduced it to *Heritiera minor* Roxb., and by others it has been referred to *Heritiera fomes* Ham. It is, however, unquestionably *Heritiera littoralis* Dryand.

DILLENIACEAE

TETRACERA Linnaeus

TETRACERA SCANDENS (Linn.) comb. nov.

Tragia scandens Linn. in Stickman Herb. Amb. (1754) 18, Amoen. Acad. 4 (1759) 128 (type!).

Delima hebecarpa DC. Syst. 1 (1818) 407.

Tetracera hebecarpa Boerl. in Cat. Hort. Bot. Bogor. (1899) 3.

Funis urens aspera Rumph. Herb. Amb. 5: 13, t. 9.

This species is not represented in our Amboina collections,

yet Funis urens aspera Rumph. is unmistakably a Tetracera and apparently the form described by de Candolle as Tetracera hebecarpa, which some authors reduce to Tetracera sarmentosa Linn., and others treat as a variety of the latter species. The Rumphian figure and description are the whole basis of Tragia scandens Linn., a species that is not included in Index Kewensis. Linnaeus later, Sp. Pl. ed. 2 (1763) 1390, referred Funis urens Rumph. to Tragia volubilis Linn., in which he was followed by Burman f., Poiret, and Henschel. Baillon, Etud. Gén. Euphorb. (1858) 461, 463, referred it to Tragia hirsuta Blume. The description, and for that matter the figure also, is unmistakably Tetracera and has nothing to do with the euphorbiaceous genus Tragia.

TETRACERA BOERLAGEI sp. nov.

Funis urens glabra Rumph. Herb. Amb. 5: 13.

AMBOINA, Batoe gadjah, Robinson Pl. Rumph. Amb. 485 (type), August 5, 1913, on trees at an altitude of about 200 meters.

Frutex scandens, ramulis junioribus adpresse hirsutis; foliis oblongis ad oblongo-ellipticis, coriaceis, nitidis, usque ad 11 cm longis, glabris vel minutissime scaberulis, integris vel obscurissime undulatis, basi rotundatis ad subacutis, apice acutis ad obtusis, nervis utrinque 10 ad 12; inflorescentiis anguste pyramidatis, leviter hirsutis; sepalis interioribus obovatis, rotundatis, 6 mm longis, carpellis 2 vel 3, dense hirsutis; folliculis 1 vel 2, rariter 3, oblongo-ovoideis, acuminatis, 8 ad 10 mm longis, parcissime hirsutis, in siccitate pallide olivaceis nitidisque, seminibus solitariis.

A scandent shrub, nearly glabrous except the very young branchlets and the inflorescence. Branches glabrous, reddishbrown, twisted, slender, tips of the young branchlets sparingly appressed-hirsute. Leaves oblong to oblong-elliptic, coriaceous, brittle, glabrous on both surfaces or very minutely and slightly scaberulous, in young leaves the midrib on the lower surface very slightly appressed-hirsute, 6 to 11 cm long, 2.5 to 5.5 cm wide, rather pale or brownish when dry, shining, base rounded to subacute, apex acute to obtuse, margins entire or very obscurely undulate: lateral nerves 10 to 12 on each side of the midrib, prominent, brown; petioles 1 cm long or less. Panicles terminal, narrowly pyramidal, up to 12 cm in length, sparingly hirsute with scattered, subappressed hairs, the branches few, distant, the lower ones 2 cm long or less. Fruiting calyx with five sepals, the outer ones broadly ovate, slightly hirsute, about 3 mm long, the inner two or three obovate,

rounded, about 6 mm long, their margins minutely ciliate. Carpels 2 or 3, narrowly ovoid, densely hirsute, the styles glabrous. Follicles 1 or 2, sometimes 3, narrowly oblong-ovate, acuminate, 8 to 10 mm long, pale olivaceous when dry, shining, with few, scattered, subappressed, rather long, stiff hairs, when fresh violet, turning brownish. Seeds solitary, broadly ovate, 2 to 2.5 mm long, the aril pale, membranaceous, loose, obovate, rounded, 3 mm long, entire or obscurely toothed, not lacerate.

This species is dedicated to Doctor J. G. Boerlage, who contracted a fever, while carrying on a botanical exploration of Amboina, which resulted in his death. It is manifestly allied to Tetracera indica Merr. (T. assa DC.), from which it differs in its smaller sepals and follicles, the latter being prominently acuminate and sparingly hirsute. From the only other endemic Amboina species, Tetracera moluccana Martelli, it differs in its much shorter petioles and smaller fewer-nerved leaves. While Rumphius's description is short and largely comparative with Funis urens aspera, the specimen cited above agrees with it in all particulars, and I consider it certainly to represent the Rumphian plant.

Ay-assa Rumph. Herb. Amb. 7: 20 has erroneously been referred by some authors to Tetracera assa DC., but the plant that Rumphius describes presents little in common with Tetracera and is certainly not referable to this genus. Christmann and Panzer, Pflanzensyst. 4 (1779) 40, t. 26, f. 1, after Houttuyn, Nat. Hist. Plantenk. 5 (1776) 275, referred the Rumphian plant to Assa indica Christm. & Panz., but the description was manifestly based on an actual specimen. The generic name was apparently taken from Rumphius, and de Candolle, Syst. 1 (1818) 402, selected assa as the specific name under Tetracera. The synonymy should be adjusted, for Assa indica presents the oldest valid name: Tetracera indica (Christm. & Panz.) comb. nov. (Assa indica Christm. & Panz. Pflanzensyst. 4 (1779) 40, t. 26, f. 1; Tetracera assa DC. Syst. 1 (1818) 402).

DILLENIA Linnaeus

DILLENIA ELLIPTICA Thunb. in Trans. Linn. Soc. 1 (1791) 200 (type!). Songium Rumph. Herb. Amb. 2: 140, t. 45.

No representative of this species occurs in our Amboina collections. *Dillenia elliptica* Thunb. was based wholly on the Rumphian figure and description. Martelli, in Beccari Malesia 3 (1887) 161, has redescribed *Dillenia elliptica* Thunb. from specimens collected in Celebes by Beccari, and doubtless this interpre-

tation of the species is correct. Rumphius states that Songium was known in Amboina as aylassalinu and as ay macaninu, in Celebes as songi and songo, and in Java as sambu. Sempu is one of the Javanese names for Dillenia indica Linn., the only white-flowered Dillenia reported from Java, so that the Javan reference included by Rumphius probably refers to Dillenia indica Linn. Linnaeus reduced both t. 45 and 46 of Rumphius to Dillenia indica Linn., in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 121, Syst. ed. 10 (1759) 1082, but later authors have followed Thunberg in the disposition of t. 45. Linnaeus was manifestly wrong in his reduction of t. 46, which is the following species. Miquel, Fl. Ind. Bat. 1^2 (1858) 11, erroneously reduced Dillenia elliptica Thunb. to D. speciosa Thunb., which is a synonym of D. indica Linn.

DILLENIA SERRATA Thunb. in Trans. Linn. Soc. 1 (1791) 201 (type!). Sangius mas et femina Rumph. Herb. Amb. 2: 142, t. 46.

This species is not represented in our Amboina collections. Dillenia serrata Thunb. was based wholly on Rumphius and must be interpreted from the Rumphian figure and description. Linnaeus erred in reducing this plate to his Dillenia indica, in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 121, Syst. ed. 10 (1759) 1082. All authors since Thunberg have been content with calling it Dillenia serrata, although the exact status of the species is quite uncertain. It seems probable that more than one species is included in the Rumphian description, as he gives the range as Amboina, Celebes, and Java. It was said by Rumphius to be abundant in Celebes at Tambocco, near Macassar, and at Toletae. Dillenia ochreata Teysm. & Binn. should be compared critically with Dillenia serrata Thunb., as it is probably identical with Thunberg's species.

THEACEAE

GORDONIA * Ellis

GORDONIA RUMPHII sp. nov.

Lignum muscosum s. Caju Iapia Rumph. Herb. Amb. 3: 203, t. 180. Amboina, Hitoe messen, Robinson Pl. Rumph. Amb. 276 (type), November 1, 1913, in forests, altitude about 175 meters, locally known as kayu lapia.

Arbor circiter 10 m alta, floribus exceptis glabra; foliis oblongis, coriaceis, usque ad 14 cm longis, acutis vel obscure acuminatis, obscure crenulatis, basi cuneatis, nervis utrinque circiter 15; floribus solitariis, axillaribus, circiter 3 cm diametro,

^{*} Retained name, Vienna Code; Lasianthus Adans. (1763) is older.

sepalis suborbicularibus, coriaceis, extus cinereo-pubescentibus, petalis extus filamentisque basi adpresse pubescentibus.

A tree about 10 m high, quite glabrous except the inflorescence. Branches terete, reddish-brown, the branchlets smooth. Leaves oblong or oblong-elliptic, coriaceous, 8 to 14 cm long, 3.5 to 5.5 cm wide, brown or brownish-olivaceous, prominently shining when dry, base cuneate, apex acute to obscurely acuminate, margins obscurely crenulate, the lower surface minutely verruculose; lateral nerves irregular, the primary ones about 15 on each side of the midrib, slender, anastomosing; petioles up to 5 mm in length. Flowers solitary, axillary, white, about 3 cm in diameter, their pedicels about 1 cm long, slightly pubescent. Sepals suborbicular, coriaceous, rounded, cinereous-pubescent externally, about 7 mm in diameter. Petals obovate, rounded, less than 1.5 cm long, externally pubescent. Stamens numerous, the basal portions of the filaments appressed-pubescent. Ovary ovoid, densely appressed-pubescent with pale hairs, the stylearms 5, short, glabrous.

The identity of this plant with Lignum muscosum is certain. It bears the same native name as that cited by Rumphius for his plant, agrees well with his description, and fairly well with the rather crude plate. The identity of Lignum muscosum has not been previously determined, although Teysmann in a letter to Hasskarl considered it a species of Gordonia.* Its alliance is with Gordonia excelsa Blume, from which it is readily distinguished by its entirely glabrous leaves and branchlets and its much smaller flowers.

Caju lapia soyanansium s. Lignum muscosum parvifolium Rumph. Herb. Amb. 3: 203, mentioned and casually described under *Caju lapia*, is apparently an entirely different plant. Hasskarl, Neue Schlüssel (1866) 67, mentions it, but suggests no identification of it. It is quite indeterminable from the data given by Rumphius.

TERNSTROEMIA † Mutis

TERNSTROEMIA ROBINSONII sp. nov.

Ichthyoctonos montana Rumph. Herb. Amb. 3: 214, t. 139.

Amboina, Hitoe messen, Robinson Pl. Rumph. Amb. 275 (type), October 18, 1913, in forests, altitude about 350 meters locally known as anaan mera.

Arbor circiter 14 m alta, glabra; foliis oblongo-obovatis, crasse coriaceis, usque ad 25 cm longis, petiolatis, apice obscure latis-

^{*} See Hasskarl, Neue Schlüssel (1866) 67.

[†]Retained name, Vienna Code; Mokof Adans. (1763), Taonabo Aubl. (1775), Dupinia Scop. (1777), and Hoferia Scop. (1777) are older.

¹⁴⁴⁹⁷¹⁻⁻⁻⁻²⁴

sime acuminatis ad obtusis, basi cuneatis, in siccitate purpureobrunneis, nervis utrinque circiter 15; fructibus magnis, ellipsoideis, circiter 6 cm longis, calycis lobis valde incrassatis, sublignosis.

A tree about 14 m high, quite glabrous, the branches stout, grayish. Leaves purplish-brown when dry, somewhat shining, thickly coriaceous, 15 to 25 cm long, 6 to 11 cm wide, generally oblong-obovate sometimes oblong, apex obtuse to very broadly and obscurely blunt-acuminate, base narrowed, cuneate; lateral nerves about 15 on each side of the midrib, slender, distinct, very obscurely anastomosing, the reticulations obsolete or nearly so; petioles stout, about 1 cm long. Flowers not seen. Fruits ellipsoid, vermilion when fresh, dark-brown when dry, about 6 cm long, solitary, their pedicels stout, about 2 cm long, the calyx persistent, the lobes much thickened, rugose, somewhat woody when dry, more or less connate, the fruiting calyx 2 to 2.4 cm in diameter, the pericarp smooth, rather brittle, each fruit containing three, red or garnet-colored, 3 cm long pyrenes which are notched at the apex, each containing two seeds.

This species agrees sufficiently closely with Rumphius's description and with the rather crude figure. It is characterized by its relatively large leaves and large fruits and is most closely allied to *Ternstroemia megacarpa* Merr., of the Philippines; from which, however, it differs in many characters, notably in its calyx-lobes being more or less connate, very much thickened, and somewhat woody when dry and in its much shorter peduncles. The form described by Rumphius in the same chapter as Ichthyoctonos litorea silvestris latifolia is possibly also referable here.

GUTTIFERAE

MESUA Linnaeus

MESUA FERREA Linn. Sp. Pl. (1753) 515.

Calophyllum nagassarium Burm. f. Fl. Ind. (1768) 121. Nagassarium Rumph. Herb. Amb. 7: 3, t. 2.

This species is not represented in our Amboina collections. *Nagassarium* was described by Rumphius from specimens cultivated in Java. It was originally reduced to *Mesua ferrea* Linn. by Murray, Syst. (1774) 525, certainly the correct disposition of it, and one that has been accepted by practically all authors. *Calophyllum nagassarium* Burm. f. is an exact synonym of *Mesua ferrea* Linn. and was based on Javan specimens with a reference to *Nagassarium* Rumph. as a synonym.

CALOPHYLLUM Linnaeus

CALOPHYLLUM INOPHYLLUM Linn. Sp. Pl. (1753) 513.

Balsamaria inophyllum Lour. Fl. Cochinch. (1790) 470.

Calophyllum bintagor Roxb. Hort. Beng. (1814) 41 (type!), Fl. Ind. ed. 2, 2 (1832) 607.

Bintangor maritima Rumph. Herb. Amb. 2: 211, t. 71.

Amboina, Robinson Pl. Rumph. Amb. 480, September 22, 1913, along the seashore, locally known as bintangor.

This is certainly the correct disposition of *Bintangor maritima*, a characteristic tree of tropical seashores of the Old World, the reduction having been made first by Linnaeus, in Stickman Herb. Amb. (1753) 10, Amoen. Acad. 4 (1759) 121, Syst. ed. 10 (1759) 1075, Sp. Pl. ed. 2 (1762) 732, and generally accepted by all authors. It is the type of *Calophyllum bintagor* Roxb. as originally published in Hort. Beng. (1814) 41.*

CALOPHYLLUM SOULATTRI Burm. f. Fl. Ind. (1768) 121.

Calophyllum spectabile Willd. in Ges. Naturf. Fr. Berl. Mag. 5 (1811) 80.

Bintangor silvestris Rumph. Herb. Amb. 2: 216, t. 72.

Bintangor silvestris altera Rumph. 1. c. 217.

AMBOINA, near houses, Robinson Pl. Rumph. Amb. 482, August 20, 1913, locally known as sulatre; Hitoe messen, Robinson Pl. Rumph. Amb. 481, in forests, altitude 150 meters, locally known as bintangor utan.

Bintangor silvestris was originally reduced by Linnaeus, through error, to the American Calophyllum calaba Linn., in Stickman Herb. Amb. (1754) 10, Amoen. Acad. 4 (1759) 121. Lamarck, Encycl. 1 (1785) 553, cites it, with doubt, under Calophyllum acuminatum Lam., which is supposed to be a synonym of Calophyllum spectabile Willd.=C. soulattri Burm. f. Choisy, in de Candolle, Prodr. 1 (1824) 562, cites it as a doubtful synonym of Calophyllum spectabile Willd.; while Hasskarl, Neue Schlüssel (1866) 42, adds Calophyllum soulattri Burm. f., which is the oldest valid specific name for this widely distributed species. Rumphius's figure is poor, but his description conforms closely to the characters of the species. Bintangor silvestris altera Rumph. (Pl. Rumph. Amb. 481), seems to be merely a form of Calophyllum soulattri Burm. f. with the leaves somewhat retuse at the apex.

CALOPHYLLUM sp.

Bintangor montana (B. silvestris tertia) Rumph. Herb. Amb. 2: 217. Amboina, Hoetoemoeri road, Robinson Pl. Rumph. Amb. 483, September 30, 1913, in forests, altitude about 300 meters.

^{*} See Robinson in Philip. Journ. Sci. 7 (1812) Bot. 414.

The specimen certainly represents the plant that Rumphius briefly described as *Bintangor montana*, but it appears to be an undescribed species. Unfortunately no flowers are available, so that it is impossible to determine the true relationships of the form within the genus *Calophyllum*. The leaves are lanceolate, 6 to 10 cm long, 2 to 3 cm wide, acute at the base, and gradually narrowed in the upper one-half to the rather slender and blunt-acuminate apex. The fruits are less than 1 cm in diameter. The plant is entirely glabrous except the ferruginous-pubescent buds.

GARCINIA Linnaeus

GARCINIA AMBOINENSIS Spreng. Syst. Veg. 2 (1825) 448 (type!). Folium acidum majus Rumph. Herb. Amb. 3: 58, t. 32.

This is a species of very doubtful status, based entirely on Folium acidum majus Rumph. Loureiro, Fl. Cochinch. (1790) 648, referred it to Oxycarpus cochinchinensis Lour.=Garcinia cochinchinensis Choisy, a species based on Cochin-China specimens, quite different from the Amboina plant described by Rumphius and known only from Indo-China.* Doctor Robinson collected in Amboina typical Garcinia dulcis Kurz, which he thought probably represented Folium acidum majus. However, while agreeing with the figure in many respects and with the description in part, the discrepancies are too great to warrant the citation of this specimen as representing the Rumphian plant. Boerlage, Cat. Hort. Bot. Bogor. (1899) 75, refers to Garcinia amboinensis Spreng., two specimens, originating in Amboina and cultivated in the botanic garden at Buitenzorg. I have sterile specimens of one of these, "VI-F-11," which certainly agrees better with the original figure and description than does Garcinia dulcis Kurz, and which may represent Folium acidum majus in spite of certain discrepancies between the specimen and the figure and description.

GARCINIA DULCIS (Roxb.) Kurz in Journ. As. Soc. Beng. 43² (1874) 88. Xanthochymus dulcis Roxb. Pl. Coromandel 3 (1819) t. 270.

Mundo Rumph. Herb. Amb. 1: 135.

AMBOINA, Hitoe lama, Robinson Pl. Rumph. Amb. 478, October 8, 1913, in forests, altitude about 175 meters.

The reduction of *Mundo* is based almost wholly on the native name, the brief description being entirely inadequate. It was from Java, and the native names *mundo*, *munder*, etc., are still

^{*} See Vesque in DC. Monog. Phan. 8 (1893) 449.

in use there for this species. The type of *Xanthochymus dulcis* Roxb.=*Garcinia dulcis* Kurz was from the Moluccas.

GARCINIA CERAMICA Boerl. Cat. Hort. Bot. Bogor. (1899) 76?

Folium acidum minus Rumph. Herb. Amb. 3: 60, t. 33.

Folium acidum minus Rumph. is almost certainly a species of Garcinia, and the above reduction is suggested. There are, however, some discrepancies between the characters indicated by Rumphius and the authentic specimens of Boerlage's species before me. Vesque, in DC. Monog. Phan. 8 (1893) 349, has suggested that it may be the same as Garcinia picrorhiza Miq., but to me it seems much closer to G. ceramica Boerl. than to G. picrorhiza Miq. Two forms are described, majus and minus, which probably represent different species. Rumphius's material was not from Amboina, but from Little Ceram and Xulabessi Islands.

GARCINIA CAMBOGIA (Gaertn.) Desr. in Lam. Encycl. 3 (1791) 701.

Mangostana cambogia Gaertn. Fruct. 2 (1791?) 106.

Gutta cambodja Rumph. Herb. Amb. 2: 251.

The form discussed by Rumphius as *Gutta cambodja* is undoubtedly the same as *Garcinia cambogia* Desr., where it was placed by Hasskarl, Neue Schlüssel (1866) 45. Henschel referred it with doubt to *Cambogia gutta* Linn., but *Cambogia gutta* Linn. is a synonym of *Garcinia morella* Desr., not of *Garcinia cambogia* Desr.*

GARCINIA CELEBICA Linn. in Stickman Herb. Amb. (1754) 7, Amoen. Acad. 4 (1759) 119, Syst. ed. 10 (1759) 1043, Sp. Pl. ed. 2 (1762) 635 (type!).

Garcinia rumphii Pierre Fl. Forest. Cochinch. Énum. XIII, t. 77, A. Mangostana celebica Rumph. Herb. Amb. 1: 134, t. 44.

AMBOINA, Way tommo, Robinson Pl. Rumph. Amb. 323, August 16, 1913, on banks of the river at low altitudes.

Garcinia celebica Linn. was based wholly on the Rumphian figure and description, which in turn were based on specimens from Macassar, Celebes, there known as kras and as mangostaan utan. Pierre, Fl. Forest Cochinch. Énum. XIII, not satisfied that specimens cultivated in the botanic garden at Buitenzorg, Java, under the name Garcinia celebica Linn. were correctly named, based his Garcinia rumphii on this material. I have a duplicate specimen of Pierre 4168, named Garcinia rumphii

^{*} See Trimen Fl. Ceyl. 1 (1893) 96.

Pierre, originating in the botanic garden at Buitenzorg, Java, which bears the native name kiras. Specimens of "VI-A-12a," "VI-A-16," and "VI-C-18a" from the Buitenzorg Botanic Garden certainly represent the same species, and agree well with the Rumphian figure and description of Mangostana celebica. Boerlage, Cat. Hort. Bot. Bogor. (1899) 69, concluded also that Garcinia rumphii Pierre is the same as Mangostana celebica Rumph. and is a synonym of Garcinia celebica Linn. The Amboina specimen collected by Robinson, cited above, should be critically compared with the closely allied Garcinia porrecta Wall. var. schizogyna Boerl. l. c. 69.

GARCINIA MANGOSTANA Linn. Sp. Pl. (1753) 443. Mangostana Rumph. Herb. Amb. 1: 132, t. 43.

The mangosteen is not represented in our Amboina collections. *Mangostana* was one of the few species figured and described by Rumphius that was reduced by Linnaeus in the first edition of the Species Plantarum, where it is cited under *Garcinia mangostana* Linn. The reduction is certainly correct and has been followed by all authors.

GARCINIA CORNEA Murr. Syst. Veg. (1774) 368 (type!). Lignum corneum Rumph. Herb. Amb. 3: 55, t. 30.

Not represented in our Amboina collections. Lignum corneum Rumph. is the whole basis of Garcinia cornea Murr., and the status of the species is now well known. It is a very characteristic species and occurs in cultivation in the botanic garden at Buitenzorg, Java; "VI-C-144" and "VI-C-144a" represent staminate and pistillate plants, both originating in Amboina. Murray has been consistently followed by all authors in this reduction of Lignum corneum. The two forms indicated and briefly described by Rumphius as latifolium and angustifolium are indeterminable from data now available. The former may be Garcinia latissima Miq., and the latter possibly Garcinia dulcis Roxb.

GARCINIA PICRORHIZA Miq. Ann. Mus. Bot. Lugd. Bat. 1 (1866) 209. Pharmacum sagueri legitimum Rumph. Herb. Amb. 2: 136, t. 44.

Boerlage, Cat. Hort. Bot. Bogor. (1899) 67, made this reduction, and I consider that he is correct, after a comparison of the Rumphian figure and description with authentic specimens of Miquel's species, duplicates from the numbers cited by Boerlage. Previous to Boerlage's reduction of the Rumphian plant

to Garcinia picrorhiza Miq., its position had not been recognized by any author.

GARCINIA PICRORHIZA Miq. var. LIMONORHIZA Boerl. Cat. Hort. Bot. Bogor. (1899) 68.

Pharmacum limonicum Rumph. Herb. Amb. 2: 137, t. 44, f. B.

This is, in all probability, correctly placed by Boerlage. It is in cultivation at Buitenzorg, but is not represented in Robinson's Amboina collections.

GARCINIA sp.?

Vidoricum domesticum Rumph. Herb. Amb. 1: 173.

This form is of wholly doubtful status. Henschel thought that it might be a species of *Bassia* or of *Diospyros*. I have suggested *Garcinia*, as Rumphius states that the bark yields a yellow juice, and his description otherwise conforms fairly well with the characters of *Garcinia*.

DIPTEROCARPACEAE

SHOREA Roxburgh

SHOREA SELANICA Blume Mus. Bot. 2 (1852) 33.

Unona? selanica DC. Prodr. 1 (1824) 92 (type!). Englehardtia selanica Blume Fl. Jav. 2 (1836) Jugl. 8 (type!).

Hopea selanica W. & A. Prodr. (1834) 85; Walp. Repert. 5 (1845) 128 (type!).

Dammara selanica Rumph. Herb. Amb. 2: 168, t. 56.

This species is not represented in our Amboina collections and is not credited to Amboina by Rumphius in the original description. The Rumphian description and figure are the whole basis of *Unona selanica* DC., *Englehardtia selanica* Blume, and *Hopea selanica* W. & A., and it is to be noted that *Englehardtia selanica* Blume and *Shorea selanica* Blume were published without reference to the earlier *Unona selanica* DC. In transferring the species to *Shorea*, Blume adds a short description, probably from Moluccan specimens. Burck, Ann. Jard. Bot. Buitenz. 6 (1887) 216, gives a more ample description based on specimens collected by Reinwardt and by Teysmann and on plants cultivated in the botanic garden at Buitenzorg, Java.

SHOREA SELANICA Blume var. LATIFOLIA Blume Mus. Bot. 2 (1852) 33.

Dammara selanica femina Rumph. Herb. Amb. 2: 169 (type!).

Blume originally reduced *Dammara selanica femina*, by error, to *Englehardtia spicata* Blume Fl. Jav. 2 (1836) Jugl. 8, followed by Hasskarl's equally erroneous reduction of it to *Englehardtia*

acerifolia Blume. Later Blume made it the type of Shorea selanica Bl. var. latifolia Bl., which is perhaps the correct disposition of it. The forms described in this chapter as Caju cawan e Java and Dammar leomelaena are undeterminable; the latter is probably a species of Canarium.

DRYOBALANOPS Gaertner

DRYOBALANOPS AROMATICA Gaertn. Fruct. 3 (1805) 49, t. 186.

Arbor camphorifera II occidentalis Rumph. Herb. Amb. 7: 65, 68.

The general discussion of camphor includes the true camphor, Cinnamomum camphora T. Nees & Eberm., as well as that produced in Malaya, the resin of Dryobalanops aromatica Gaertn. This reduction was made by Blume, Mus. Bot. 2 (1851) 38, and by de Vriese, who placed it under Dryobalanops camphora Colebr., a synonym of D. aromatica Gaertn.

DIPTEROCARPUS Gaertner

DIPTEROCARPUS sp.?

Arbor koring Rumph. Herb. Amb. 2: 74.

The reduction of *Arbor koring* to *Dipterocarpus* is based wholly on the observation made by Hamilton that the oil produced by the tree was secured by the same method as that used in gathering the oil of *Dipterocarpus*. The probabilities are very great that this is the correct disposition of *Arbor koring*. No further reduction of it is possible from the data given by Rumphius.

BIXACEAE

BIXA Linnaeus

BIXA ORELLANA Linn. Sp. Pl. (1753) 512.

Pigmentaria Rumph. Herb. Amb. 2: 79, t. 19.

Pigmentaria Rumph. was first reduced to Bixa orellana Linn. by Linnaeus, in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 120, Syst. ed. 10 (1759) 1074, which is manifestly the correct disposition of it and has been accepted by all authors.

FLACOURTIACEAE

PANGIUM Reinwardt

PANGIUM EDULE Reinw. in Syll. Ratisb. 2 (1828) 12.

Pangium Rumph. Herb. Amb. 2: 182, t. 59.

Amboina, Kati-kati, Robinson Pl. Rumph. Amb. 212, October 20, 1913, in light forests, altitude about 75 meters, locally known as pangi.

The reduction of *Pangium* made by Reinwardt in the original publication of the genus and species has been followed by all authors and is manifestly the correct disposition of it. The species is of very wide distribution in the Malayan region.

FLACOURTIA L'Héritier

FLACOURTIA INDICA (Burm. f.) comb. nov.

Gmelina indica Burm. f. Fl. Ind. (1768) 132, t. 39, f. 5.

Mespilus sylvestris Burm. Index Univ. Herb. Amb. 7 (1755) [18] (type!), non Burm. l. c. [14].

Flacourtia sepiaria Roxb. Pl. Coromandel 1 (1795) 48, t. 68.

Flacourtia ramontchi L'Hérit. Stirp. Nov. (1784-85) 59, t. 30, 31.

Spina spinarum I mas Rumph. Herb. Amb. 7: 36, t. 19, f. 1, 2. Spina spinarum II femina Rumph. l. c. 37.

This species is not represented in our Amboina collections. Rumphius states, however, that the plant was an introduced one there, originating in Java, where it was common. spinarum Rumph. is the whole basis of Mespilus sylvestris Burm., as published on page 18 of his Index Universalis; it is not included in Index Kewensis. The name is invalid, however, because Burman published the same binomial on page 14 of the same work for an entirely different species, Carissa carandas Linn. (see p. 425). I consider that the form figured and described by Rumphius is the same as Flacourtia sepiaria Roxb., from which I cannot distinguish F. ramontchi L'Hérit. Linnaeus cites the first figure as a synonym of Carissa spinarum Linn., but the plant actually described and hence the type of the species is a true Carissa; figure 3 of the same plate, the type of Mespilus silvestris Burm. Index Universalis [14] non [18], is apparently a true Carissa. Linnaeus, in his erroneous reduction of Spina spinarum Rumph., was followed by Murray, Lamarck, Willdenow, Roemer and Schultes, Dietrich, and Pritzel. Loureiro, Fl. Cochinch. (1790) 634, cites the Rumphian species under Stigmarota jangomas Lour.=Flacourtia jangomas (Lour.) Steud. By other authors it has been referred to Damnacanthus indicus Gaertn., of the Rubiaceae; to Flacourtia jangomas Steud.; to Roumea sp.=Flacourtia; and to Flacourtia cataphracta Roxb. It is possible that Spina spinarum II femina Rumph, represents a species distinct from Spina spinarum I mas. Burman's Gmelina indica supplies the oldest valid specific name for the species and is here adopted. Burman's type was from Java, for which he cites the Javanese name doery rockan.

HOMALIUM Jacquin

HOMALIUM FOETIDUM (Roxb.) Benth. in Journ. Linn. Soc. Bot. 4 $(1860) \cdot 37.$

Ludia foetida Roxb. Hort. Beng. (1814) 38, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 508.

Blackwellia foetida Wall. Cat. (1831) no. 4899, nomen nudum, Delessert Ic. 3 (1837) 32, t. 53.

Blackwellia moluccana Blume Mus. Bot. 2 (1852) 27 (type!). Metrosideros molucca mas Rumph. Herb. Amb. 3: 25, t. 11.

Nothing resembling this species is represented in our Amboina collections. Homalium foetidum Benth, includes more than one species, the Mergui specimen cited being apparently Homalium griffithianum Kurz. It is to be noted that Bentham does not cite Ludia foetida Roxb. as a synonym of Homalium foetidum Benth. He based his species on Blackwellia foetida Wall., but Wallich quotes Ludia foetida Roxb. as a synonym; the type of Ludia foetida Roxb. was a specimen cultivated in Calcutta, orig-

inating in Amboina. In Index Kewensis Ludia foetida Roxb. is reduced to Flacourtia sumatrana Planch. Blackwellia moluccana Blume is based wholly on the Rumphian description and figure. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 47, thought that Metrosideros molucca mas might be a Helicia, but this suggested reduction is manifestly entirely wrong.

CARICACEAE

CARICA Linnaeus

CARICA PAPAYA Linn. Sp. Pl. (1753) 1036.

Papaya vulgaris Lam. Encycl. 5 (1804) 2.

Papaja mas et femina Rumph. Herb. Amb. 1: 145, t. 50, 51.

Rumphius's illustrations of the common papaya are excellent. The first reduction to Carica papaya Linn. was made by Linnaeus, in Stickman Herb. Amb. (1754) 7, Amoen. Acad. 4 (1759) 119, which is manifestly the correct disposition of Papaja Rumph, and is generally accepted by all authors.

DATISCACEAE

OCTOMELES Miquel

OCTOMELES SUMATRANA Miq. Fl. Ind. Bat. Suppl. (1860) 336.

Octomeles moluccana Teysm. & Binn. ex Hassk. in Abhandl. Nuturf. Gesellsch. Halle 9 (1866) 208 (Neue Schlüssel 66) (type!). Octomeles moluccana Warb. in Engl. Bot. Jahrb. 13 (1891) 386.

Palacca Rumph. Herb. Amb. 3: 195, t. 125.

Teysmann and Binnnendyck, quoted by Hasskarl, Neue

Schlüssel (1866) 66, correctly reduced Palacca Rumph. to Octomeles, but considered the species to be distinct from O. sumatrana Miq., calling it Octomeles moluccana. Warburg later considered that the oriental Malayan form was distinct from the one found in the Sunda Islands and described it as new under Octomeles moluccana Warb. I believe that K. Schumann and Lauterbach were correct in reducing Octomeles moluccana Warb. to O. sumatrana Miq. At any rate, if two species are represented, Teysmann and Binnendyck should be quoted as the authority for Octomeles moluccana, for although they published no description, their name is typified by Palacca as described and figured by Rumphius.

BEGONIACEAE

BEGONIA Linnaeus

BEGONIA TUBEROSA Lam. Encycl. 1 (1785) 393 (type!), excl. syn. B. capensis Linn.

Diploclinium tuberosum Miq. Fl. Ind. Bat. 11 (1856) 685.

Empetrum acetosum I album Rumph. Herb. Amb. 5: 457, t. 169, f. 2.

Amboina, Batoe gadjah and Batoe merah, Robinson Pl. Rumph. Amb. 65, August, 1913, altitude 15 to 200 meters, on rocks.

Empetrum acetosum was originally reduced by Linnaeus to Begonia obliqua Linn., in Amoen. Acad. 4 (1759) 133, Sp. Pl. ed. 2 (1763) 1497, in which he was followed by Burman f., Fl. Ind. (1768) 222. This disposition of it was entirely erroneous, as Begonia obliqua Linn. is an American species. Lamarck, Encycl. 1 (1785) 393, made it the type of his Begonia tuberosa. It is true that Lamarck erroneously gives as the first citation Begonia capensis Linn., but that he intended the Rumphian figure to typify his plant is manifest from his specific name. This was taken from the tuber-like lower part of the plant as shown in Rumphius's figure, which, however, was intended merely to represent a portion of the rock on which the plant grows. De Candolle, Prodr. 15 1 (1864) 323, mentions this tuber-like portion of the drawing thus: "Ex ic. Rumphii tuber 3 poll. crassum et habitus totus Cyclaminis."

Possibly referable here is *Robinson Pl. Rumph. Amb. 66* from Lateri and Koesoekoesoe sereh, August and September, 1913, on rocks, with smaller leaves than *No. 65*, cited above, in which the leaves are distinctly purplish when dry. Doctor Robinson thought this might represent *Empetrum acetosum rubrum* Rumph. Herb. Amb. 5: 457, but Rumphius describes this form as having leaves a palm wide, which is not true of *No. 66*.

I am unable definitely to place the forms very briefly described by Rumphius under Empetrum acetosum II rubrum and III cordatum. The former Hasskarl, Neue Schlüssel (1866) 146, thought might be referable to Begonia (Diploclinium) rubrum Blume and the latter to Begonia mollis A. DC. It seems probable that Empetrum acetosum II rubrum was merely a broad-leaved form of E. acetosum I album=Begonia tuberosa Lam., but E. acetosum III cordatum, described as pilose, probably represents an entirely different species, not, however, represented in our Amboina collections.

CACTACEAE

OPUNTIA Tournefort

OPUNTIA sp.

Ficus indica Rumph. Herb. Amb. 4: 89.

The description is very imperfect, but probably applies to *Opuntia*. Hasskarl, Neue Schlüssel (1866) 80, thought that it might be *Opuntia dillenii* Haw.

THYMELAEACEAE

GYRINOPSIS Decaisne

GYRINOPSIS BRACHYANTHA Merr. in Philip. Journ. Sci. 7 (1912) Bot. 313.

Cortex filarius Rumph. Herb. Amb. 7: 13.

Amboina, Way uri, Robinson Pl. Rumph. Amb. 274, September 9, 1913, in forests, altitude about 100 meters, locally known as melowassi.

The specimen of *melowassi* is in fruit, but is apparently identical with the Luzon species described by me as *Gyrinopsis brachyantha*. It differs from *G. cumingiana* Dcne. not only in its shorter flowers, but also in the venation of its leaves, all the veins being slender and indistinct, the primary not more prominent than the secondary ones. Hasskarl, Neue Schlüssel (1866) 186, cites *Cortex filarius* as a synonym of *Anassera moluccana* Pers. and of *A. rumphii* Span.; but Persoon, Syn. 1 (1805) 265, and Lamarck before him, under *Anasser moluccana* Lam., Ill. 2 (1797) 40, cites not *Cortex filarius* Rumph. but *Cortex foetidus* Rumph. Herb. Amb. 7:12, t. 7, which is a *Pittosporum*. The correct status of *Cortex filarius* Rumph. has not been previously indicated. The genus *Gyrinopsis* has been reported only from the Philippines, but apparently also occurs in Borneo.

AQUILARIA * Lamarck

AQUILARIA MALACCENSIS Lam. Encycl. 1 (1783) 49.

Aquilaria secundaria DC. Prodr. 2 (1825) 59 (type!).

Aquilaria ovata Cav. Diss. (1790) 377, t. 224.

Agallochum secundarium (coinamense et malaicense) Rumph. Herb. Amb. 2: 34, 35, t. 10.

This species was not described from Amboina material. is apparently the same as *Aguilaria malaccensis* Lam. cites the Rumphian description and figure in his original description. The figure is cited by Loureiro, Fl. Cochinch. (1790) 267, under Aloexylum agallochum Lour., but with a reference to Agallochum Rumph. Herb. Amb. 2: 29=Aguilaria agallocha Roxb., not to Aquilaria secundarium Rumph. Roxburgh's Aquilaria agallocha is a species published quite independently of Aloexulum agallochum Lour, and is hence not to be interpreted by Loureiro's description. From the characters assigned by Loureiro to Aloexylum, his plant seems to belong in the Leguminosae, although it has very generally been considered to be the same as Aquilaria agallocha Roxb. Aquilaria secundaria DC. was based wholly on Rumphius's description and figure of Agallochum secundarium and is a synonym of Aguilaria malaccensis Lam.

AQUILARIA AGALLOCHA Roxb. Hort. Beng. (1814) 33, nomen nudum, DC. Prodr. 2 (1825) 59; Roxb. Fl. Ind. ed. 2, 2 (1832) 422.

Agallochum s. Calambac Rumph. Herb. Amb. 2: 29.

The status of *Agallochum* or *Calambac* is doubtful. It was not described from Amboina material, but probably is the same as the Indian *Aquilaria agallocha* Roxb. *Agallochum* "officinarum Lam.," cited as Encycl. 1 (1783) 48 and listed in Index Kewensis as a synonym of *Aquilaria malaccensis* Lam. l. c. 49, I consider has no status, as Lamarck certainly did not intend a publication, but merely discussed the plant under Bauhin's name, *Agallochum officinarum* Bauh. Pin. (1623) 393.

LYTHRACEAE

LAGERSTROEMIA Linnaeus

LAGERSTROEMIA INDICA Linn. Syst. ed. 10 (1759) 1076 (type!), Sp. Pl. ed. 2 (1763) 734.

Lagerstroemia chinensis Linn. Amoen. Acad. 4 (1759) 137 (type!). Tsjinkin Rumph. Herb. Amb. 7: 61, t. 28, f. 1.

This species is not represented in our Amboina collections.

^{*} Retained name, Vienna Code; Agallochum Lam. (1783) is older.

The plate is a fair representation of the common and well-known Lagerstroemia indica Linn. It is the whole basis of Lagerstroemia indica Linn. and of L. chinensis Linn. as originally published, both in the year 1759. As to priority of publication I have no means of determining between volume four of the Amoenitates Academicae and the tenth edition of the Systema, but as Linnaeus himself abandons the name Lagerstroemia chinensis in favor of L. indica and as L. indica Linn. is the name universally used for this well-known species, it should be maintained. Lagerstroemia chinensis Linn. does not appear in Index Kewensis, but Lagerstroemia chinensis Lam. Encycl. 3 (1791) 375, also typified by Tsjinkin of Rumphius, is listed there as a synonym of L. indica Linn.

LAWSONIA Linnaeus

LAWSONIA INERMIS Linn. Sp. Pl. (1753) 349.

Cyprus Rumph. Herb. Amb. 4: 42, t. 17.

The common henna is not represented in our Amboina collections. Cyprus was originally reduced to Lawsonia spinosa Linn. by Linnaeus, in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1753) 126, Sp. Pl. ed. 2 (1762) 498, which is a synonym of Lawsonia inermis Linn. Some authors have referred Cyprus to Lawsonia alba Lam., L. inermis var. spinosa Pers., and L. alba var. spinosa Lam., but these are all synonyms of the common and widely distributed Lawsonia inermis Linn.

PEMPHIS Forster

PEMPHIS ACIDULA Forst. Char. Gen. (1776) 68, t. 34.

Lythrum pemphis Linn. f. Suppl. (1781) 249.

Aegiceras ferreum Blume Bijdr. (1825) 693 p. p. quoad syn. Rumph.

Mangium ferreum mas Rumph. Herb. Amb. 3: 120, t. 79, excl. f. A, B.

Mangium porcellanicum Rumph. Herb. Amb. 3: 126, t. 84.

This common and widely distributed strand plant is not represented in our Amboina collections. Mangium ferreum mas as figured by Rumphius presents a flowering branch of Pemphis acidula Forst., but the additional figures A and B are Aegiceras. This mixture of the two species was first pointed out by Teysmann, as quoted by Hasskarl, Neue Schlüssel (1866) 57. The form described by Rumphius, l. c., as Mangium ferreum femina is probably merely Pemphis acidula Forst. Mangium porcellanicum Rumph. was first reduced to Lythrum pemphis Linn. by Retzius, Obs. 5 (1789) 4, and as Pemphis acidula Forst. this is the correct disposition of it.

SONNERATIACEAE

SONNERATIA * Linnaeus f.

SONNERATIA ALBA Sm. in Rees. Cycl. 33 (1816) no. 2.

Mangium caseolare album Rumph. Herb. Amb. 3: 111, t. 73.

Amboina, Wakeroe, and at Ayer putri, Robinson Pl. Rumph. Amb. 290, July 28 and October 17, 1913, along tidal streams, locally known as mangi mangi. "Flower apetalous, sepals lilac inside."

Mangium caseolare album was originally referred by Linnaeus to Rhizophora caseolaris, in Stickman Herb. Amb. (1754) 13, Linnaeus overlooking the fact that at least two distinct species were considered by Rumphius, one having flowers without petals, and one with petals. I have not seen the original description of Sonneratia alba Smith, which may have been based in part on Rumphius. Succeeding authors, de Candolle, Don, Blume, and Miquel, cite the Rumphian plate as representing Sonneratia alba Smith.

SONNERATIA CASEOLARIS (Linn.) Engl. in Engl. & Prantl Nat. Pflanzenfam. Nachtr. 1 (1897) 261.

Rhizophora caseolaris Linn. p. p., in Stickman Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 123, Syst. ed. 10 (1759) 1043, Sp. Pl. ed. 2 (1763) 635 (type!).

Sonneratia acida Linn. f. Suppl. (1781) 252.

Sonneratia pagatpat Blanco Fl. Filip. (1837) 424.

Mangium caseolare rubrum Rumph. Herb. Amb. 3: 112. t. 74.

Amboln'A, Paso, Robinson Pl. Rumph. Amb. 291, October 29, 1913, at the back of a mangrove swamp, "petals present, lilac."

This is Rhizophora caseolaris Linn. in part only. The original description in Stickman, Herb. Amb. (1754) 13, is as follows: "73. 75. Mangium caseolare [=] Rhizophora caseolaris, foliis ovatis obtusis, floribus solitariis, fructibus orbiculatis depressis mucronatis." The figures refer to plates 73 to 75 of Rumphius, inclusive. As noted above t. 73 represents the apetalous Mangium caseolare album Rumph. and is Sonneratia alba Smith; t. 74, however, represents Mangium caseolare rubrum Rumph., definitely described as having petals. Perhaps on a very strict interpretation of types, t. 73 should represent the plant now known as Sonneratia caseolaris (Linn.) Engl., in which case the name Sonneratia caseolaris would have to be applied to the plant now known as Sonneratia alba Sm., and what is here interpreted as Sonneratia caseolaris would have

^{*} Retained name, Vienna Code; Blatti Adans. (1763) and Pagapate Sonn. (1776) are older.

to be called *Sonneratia pagatpat* Blanco. Botanists very generally, since the publication of *Sonneratia acida* Linn. f. in 1781, have referred to it *Mangium caseolare rubrum* of Rumphius, including tt. 74, 75; but *Sonneratia acida* Linn. f. is merely a synonym of *Sonneratia caseolaris* (Linn.) Engl., as interpreted by Engler and as interpreted here.

PUNICACEAE

PUNICA Linnaeus

PUNICA GRANATUM Linn. Sp. Pl. (1753) 472.

Malum granatum Rumph. Herb. Amb. 2: 94, t. 24, f. 1.

The common pomegranate is not represented in our Amboina collections, although it is found in scattered cultivation throughout the Malayan region. *Malum granatum* was first reduced to *Punica granatum* Linn. by Linnaeus, in Stickman Herb. Amb. (1753) 9, Amoen. Acad. 4 (1759) 120, Syst. ed. 10 (1759) 1056, which is manifestly the correct disposition of it.

LECYTHIDACEAE

BARRINGTONIA * Forster

BARRINGTONIA ASIATICA (Linn.) Kurz in Journ. As. Soc. Beng. 45 ² (1876) 131; 46 ² (1877) 70.

Mammea asiatica Linn. Sp. Pl. (1753) 512.

Barringtonia speciosa Forst. Char. Gen. (1776) 76 t. 38, f. A-C; Linn. f. Suppl. (1781) 312.

Agasta asiatica Miers in Trans Linn. Soc. Bot. 1 (1875) 61.

Agasta indica Miers l. c. 63.

Butonica rumphiana Miers l. c. 68.

Butonica Rumph. Herb. Amb. 3: 179, t. 114.

Amboina, Robinson Pl. Rumph. Amb. 466, September 16, 1913, along the river near the town of Amboina.

Butonica was first reduced to Barringtonia speciosa by the younger Linnaeus, Suppl. (1781) 312, which has been followed by all authors except Miers. The latter retains Barringtonia speciosa Forst. as the sole representative of the genus which he confined to Polynesia and removed the Indo-Malayan forms from Barringtonia as Agasta asiatica (Linn.) Miers and A. indica Miers. He has not been followed by subsequent authors, the general conclusions regarding Miers's proposed classification, in which I concur, being that his three species are all merely forms of the common and widely distributed strand plant, Barringtonia asiatica (Linn.) Kurz. The type of the Linnean species, Mammea asiatica, was collected by Osbeck on a small

^{*} Retained name, Vienna Code; Huttum Adans. (1763) is older.

island near the western end of Java. Butonica rumphiana Miers is certainly identical with Mammea asiatica Linn.=Barringtonia asiatica Kurz.

BARRINGTONIA RACEMOSA (Linn.) Blume ex DC. Prodr. 3 (1828) 288; Roxb. Fl. Ind. ed. 2, 2 (1832) 634.

Eugenia racemosa Linn. Sp. Pl. (1753) 471.

Stravadia alba Pers. Syn. 2 (1807) 30.

Stravadium album DC. Prodr. 3 (1828) 289.

Barringtonia alba Blume in Fl. des Serres I 7 (1851-52) 23.

Barringtonia elba Kostel. Allgem. Med. Pharm. Fl. 4 (1835) 1536.

Stravadium rubrum DC. Prodr. 3 (1828) 289, p. p., quoad syn. Rumph.

Butonica terrestris Miers in Trans. Linn. Soc. Bot. 1 (1875) 69.

Barringtonia rubra Blume Fl. des Serres I 7 (1851-52) 23.

Butonica rubra Miers in Trans. Linn. Soc. Bot. 1 (1875) 70.

Barringtonia inclyta Miers in Trans. Linn. Soc. Bot. 1 (1875) 71.

Butonica terrestris rubra Rumph. Herb. Amb. 3: 181! (t. 115?).

Butonica terrestris alba Rumph. Herb. Amb. 3: 181, t. 116.

Amboina, Paso, Robinson Rumph. Amb. 467, November 25, 1913, near the beach.

This much-named species is widely distributed along and near the seashore from India to Malaya and Polynesia. Miers has attempted with little success to distinguish several species. As the proper authority for *Barringtonia racemosa*, I have selected Blume (1828) in preference to Roxburgh, as Roxburgh's original use of the name, Hort. Beng. (1814) 52, is a *nomen nudum*.

In previous reductions of the Rumphian descriptions and figures, practically all authors have assumed that two species were involved. Butonica terrestris alba was originally reduced by Linnaeus to Eugenia racemosa Linn., in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 124, Syst. ed. 10 (1759) 1055, Sp. Pl. ed. 2 (1762) 673; but other authors have reduced it to Barringtonia acutangula Gaertn., to Stravadia alba Pers., to Barringtonia alba Kostel., to Butonica alba Miers, etc. The description and the figure apply unmistakably to Barringtonia racemosa (Linn.) Blume as here interpreted.

The description of *Butonica terrestris rubra* Rumph. is unmistakably *Barringtonia racemosa* (Linn.) Blume, as here interpreted, but the figure, which is poor, may represent another species, possibly *Barringtonia acutangula* Gaertn. In Rumphius's description note:

Folia * * * unum vel sesquipedem longi, immo longiora * * * palmam nempe lata, vel paulo latiora * * *. Flores ex longo, tenui, & dependente petiolo, binos pedes longo * * * huic viridia insident capita instar Olivarum tenerarum, per illum laxe dispersa, quae sese aperiunt in bina vel terna crassa & concava petala [sepals].

The description otherwise applies to Barringtonia racemosa, not to B. acutangula Gaertn., to which it has been reduced by many authors. It was originally reduced by Linnaeus to Eugenia acutangula Linn., in Stickman Herb. Amb. (1754) 14, Amoen. Acad. 4 (1759) 124, Sp. Pl. ed. 2 (1762) 673; by Lamarck, Encycl. 3 (1789) 197, to Eugenia racemosa Linn.; by Loureiro, Fl. Cochinch. (1790) 410, to Meteorus coccineus Lour., which is a possible synonym of Barringtonia racemosa Blume; and by other authors to Barringtonia acutangula Gaertn., to Stravadia rubra Pers., to Stravadium rubrum DC., to Barringtonia rubra Blume, and finally by Miers to Butonica terrestris Miers.

RHIZOPHORACEAE

The Rhizophoraceae described and figured by Rumphius are obscure, and the actual status of the several species involved is susceptible of various interpretations. The species actually represented in our Amboina collections are the forms commonly known as Bruguiera eriopetala W. & A., B. caryophylloides Blume, B. parviflora W. & A., and Rhizophora conjugata Linn. By a strict interpretation of types, following the principles of priority, most of these names must be discarded, Bruguiera eriopetala W. & A. becoming B. sexangula (Lour.) Spreng., B. caryophylloides Blume becoming B. cylindrica (Linn.) Blume, and Rhizophora conjugata auct., non Linn., becoming R. candelaria DC. Species apparently described by Rumphius, but not included in the Amboina collections at present available for study, are apparently Ceriops tagal (Perr.) C. B. Rob. (C. candolleana Arn.) and Bruguiera conjugata (Linn.) Merr. (B. gymnorhiza Lam.). A number of species and synonyms must be interpreted wholly or in part from the Rumphian figures and descriptions. An attempt has here been made to select the earliest valid specific name in each case and to adjust the synonymy, but a future monograph of the group, based on very comprehensive collections, may modify some of these conclusions.

CERIOPS Arnott

CERIOPS TAGAL (Perr.) C. B. Rob. in Philip. Journ. Sci. 3 (1908) Bot. 306.

Rhizophora tagal Perr. Mém. Soc. Linn. Paris 3 (1824) 138.

Rhizophora timoriensis DC. Prodr. 3 (1828) 32.

Ceriops candolleana Arn. in Ann. Nat. Hist. 1 (1838) 363.

Mangium caryophylloides II parvifolium et III latifolium Rumph. Herb. Amb. 3: 119.

No representative of the genus Ceriops occurs in our Amboina

collections. The suggested reduction of the two forms described under Mangium caryophylloides Rumph. is after Hasskarl, Neue Schlüssel (1866) 57, but Ceriops tagal is an older name than C. candolleana Arn. Blume, Mus. Bot. 1 (1849) 143, suggests that Mangium caryophylloides II may be the same as Ceriops zippeliana Blume, and that Mangium caryopylloides III may be the same as Ceriops forsteniana Blume, but both of Blume's species are apparently merely forms of the common and widely distributed Ceriops tagal C. B. Rob. Blume also suggests that Mangium minus Rumph., Herb. Amb. 3: 106 quoad descr., excl. t. 69, may be Ceriops zippeliana Blume, which may be the correct disposition of the description; the plate is considered under Bruguiera conjugata (Linn.) Merr. and under B. cylindrica (Linn.) Blume (p. 388).

RHIZOPHORA Linnaeus

RHIZOPHORA CANDELARIA DC. Prodr. 3 (1828) 32 (type!).

Rhizophora conjugata auct. plur., non Linn. Rhizophora apiculata Blume Enum. 1 (1828) 91. Mangjum candelarium Rumph. Herb. Amb. 3: 108, t. 71, 72.

Amboina, near the town of Amboina, Robinson Pl. Rumph. Amb. 266, July 26, 1913, along tidal streams, locally known as mangi mangi.

While both plates given by Rumphius are very crude, they unmistakably represent the form with short peduncles bearing usually two flowers. The description, however, may include also the allied Rhizophora mucronata Lam., which is distinguished by its longer peduncles and more numerous flowers. naeus it was erroneously reduced to the American Rhizophora mangle, in Stickman Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 123, Syst. ed. 10 (1759) 1043, Sp. Pl. ed. 2 (1763) 634, in which he was followed by Lamarck, Willdenow, Burman f., Roxburgh, and other authors. Blume, Mus. Bot. 1 (1849) 132, placed it under Rhizophora mucronata Lam. with the comment "descriptio satis bona, figurae minus rectus!," while Walpers, Repert. 2 (1843) 70, placed it under Rhizophora conjugata Linn. Rhizophora candelaria DC. is a composite species to be interpreted from Mangium candelarium Rumph. and Pee-kandel Rheed. Hort. Malabar. 6: t. 34, Rheede being cited first, Rumphius second; but as the specific name is manifestly taken from Rumphius, while the description given by de Candolle applies better to the form generally interpreted as Rhizophora conjugata auct. (non Linn.) than to R. mucronata Lam. Rheede's figure is considered to represent Rhizophora mucronata Lam.

BRUGUIERA Lamarck

BRUGUIERA CONJUGATA (Linn.) Merr. in Philip. Journ. Sci. 9 (1914) Bot. 118.

Rhizophora conjugata Linn. Sp. Pl. (1753) 443, non aliorum!

Rhizophora gymnorhiza Linn. l. c.

Bruguiera gymnorhiza Lam. Ill. 2 (1797) t. 397, Encycl. 4 (1798) 696.

Bruguiera rumphii Blume Mus. Bot. 1 (1849) 138.

Rhizophora? palun DC. Prodr. 3 (1828) 33.

Bruguiera gymnorhiza Lam. var. palun Blume Mus. Bot. 1 (1849) 136.

Mangium celsum Rumph. Herb. Amb. 3: 102, t. 68.

Mangium minus Rumph. Herb. Amb. 3: 106, t. 69 excl. fl. et f. A, B.

There is no specimen of this species in our Amboina collections; and, although both of the figures cited above are crude, there is very little doubt that both are properly referable here. The reduction of Mangium celsum was first made by Linnaeus, in Stickman Herb. Amb. (1754) 12, Amoen. Acad. 4 (1759) 123, Syst. ed. 10 (1759) 1043 (Rhizophora gymnorhiza Linn.), in which he was followed by various other authors. Since the transfer of the species to Brugiera, the plate has very generally been cited under B. gymnorhiza Lam., although Blume placed it under his B. rumphii. Mangium minus Rumph, is manifestly a mixture, the leaves and fruits apparently being the same as those of B. conjugata (B. gymnorhiza), but the flowers and figures A and B certainly represent Bruguiera cylindrica Blume, below. It is, excluding figures A and B, the whole basis for Rhizophora palun DC. Blume, Mus. Bot. 1 (1849) 143, suggests that the description, but not the plate, of Mangium minus s. palun may be Ceriops zippeliana Blume (see Ceriops tagal (Perr.) C. B. Rob. p. 386). It is to be noted that the two attached flowers on the plate of Mangium minus Rumph. Herb. Amb. 3: 106, t. 69, and figures A and B, were copied by Burman from Rheede's figure of Cari Candel, Hort. Malabar. 6: t. 33, and have nothing to do with the plant actually figured and described by Rumphius; see under Bruguiera cylindrica (Linn.) Blume. below.

BRUGUIERA CYLINDRICA (Linn.) Blume Enum. Pl. Jav. (1828) 93.

Rhizophora cylindrica Linn. Sp. Pl. (1753) 443.

Rhizophora caryophylloides Burm. f. Fl. Ind. (1768) 109.

Bruquiera caryophylloides Blume Enum. Pl. Jav. (1828) 93.

Kanilia caryophylloides Blume Mus. Bot. 1 (1849) 141.

Mangium minus Rumph. Herb. Amb. 3: t. 69, pp. quoad fl. et f. A, B.

Mangium caryophylloides Rumph. Herb. Amb. 3: 119, t. 78.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 265, along tidal streams, July 26, 1913, locally known as tonki.

Rhizophora cylindrica Linn. must be interpreted solely by Cari-Candel Rheed. Hort. Malabar. 6:59, t. 33, which most authors agree represents the form described by Blume as Bruquiera caryophylloides (Burm. f.) Blume. Mangium minus Rumph., as figured, is manifestly a composite species, the attached flowers and figures A and B having been copied by Burman in editing Rumphius's work from Cari-Candel Rheed. Hort. Malabar. 6: t. 33. The leafy branch and fruits, excluding the attached flowers and figures A and B, and the description for the most part are probably referable to Bruguiera gymnorhiza Lam. (B. rheedi Blume). It was reduced by Linnaeus to his Rhizophora cylindrica, in Stickman Herb. Amb. (1754) 12, Amoen. Acad. 4 (1759) 123, Syst. ed. 10 (1759) 1043, Sp. Pl. ed. 2 (1762) 635, in which he was followed by Burman, Lamarck, Willdenow, and other authors. Mangium caryophylloides Rumph, is the basis of Rhizophora caryophylloides Burm, f., Fl. Ind. (1768) 109, from which again Bruguiera caryophylloides Blume and Kanilia caryophylloides Blume must be interpreted. The figure is not good, but is undoubtedly referable here, while the description applies closely to the form generally named Bruguiera caryophylloides Blume=B. cylindrica (Linn.) Blume.

BRUGUIERA SEXANGULA (Lour.) Poir. in Lam. Encycl. Suppl. 4 (1816) 262.

Rhizophora sexangula Lour. Fl. Cochinch. (1790) 297.

Bruguiera eriopetala W. & A. in Ann. Nat. Hist. 1 (1838) 368.

Bruguiera gymnorhiza Blume Mus. Bot. 1 (1849) 136, non Lam.

· Bruguiera cylindrica Blume l. c. 137.

Mangium digitatum Rumph. Herb. Amb. 3: 107, t. 70.

AMBOINA, Ayer putri, Robinson Pl. Rumph. Amb. 264, July 28, 1913, along tidal streams, locally known as mangi mangi.

Mangium digitatum Rumph. has been reduced by some authors to Bruguiera gymnorhiza Lam. and by others to B. cylindrica Blume. It seems, however, to be the species commonly known as Bruguiera eriopetala W. & A., which I have here reduced to the older Bruguiera sexangula Poir. (Rhizophora sexangula Lour.).

The generic description given by Linnaeus, Gen. Pl. (1754) 202, is unmistakably *Rhizophora* as at present understood, although the first two species cited in his Species Plantarum (1753) 443 are representatives of *Bruguiera*, the third a *Kandelia*, and the last two true *Rhizophorae*. The first species, *Rhizophora conjugata* Linn., has been misinterpreted by most authors since its publication, but it has page priority over *Rhizophora gymnorhiza* Linn. Trimen * states:

^{*} Fl. Ceyl. 2 (1894) 154.

There is no specimen in Hermann's Herb., but his drawing is unmistakably this species [Bruguiera gymnorhiza Lam.] and it is the whole foundation for Linnaeus's Rhizophora conjugata, which name has been since always applied to another plant, R. Candelaria DC., to which this bears a strong resemblance in foliage.

If rules of priority be followed, the adoption of the name *Bruguiera conjugata* is unavoidable for this widely distributed Indo-Malayan species.

COMBRETACEAE

TERMINALIA * Linnaeus

TERMINALIA CATAPPA Linn. Mant. 1 (1767) 128, 2 (1771) 519.

Terminalia moluccana Lam. Encycl. 1 (1783) 349 (type!). Juglans catappa Lour. Fl. Cochinch. (1790) 573.

Catappa domestica Rumph. Herb. Amb. 1: 174, t. 68.

Amboina, Hatiwe, Robinson Pl. Rumph. Amb. 414, September 4, 1913, along the seashore, locally known as katappan.

The Rumphian figure and description are, at least in part, the basis of Terminalia catappa Linn., as they were cited in the original publication of the species. They are also the whole basis of Terminalia moluccana Lam., cited above, and in part the basis of Juglans catappa Lour. The three forms described by Rumphius are probably all referable to Terminalia catappa Linn., which presents considerable variation in its fruit characters. Hasskarl, Neue Schlüssel (1866) 22, has referred all of them to varietal forms, Catappa domestica to Terminalia catappa var. macrocarpa Hassk., C. silvestris litorea to T. catappa var. rhodocarpa Hassk., and C. silvestris altera to T. catappa var. chlorocarpa Hassk. The form distributed under Robinson Pl. Rumph. Amb. 414 is exactly Catappa silvestris litorea Rumph.

QUISQUALIS Linnaeus

QUISQUALIS INDICA Linn. Sp. Pl. ed. 2 (1762) 556 (type).

Quisqualis pubescens Burm. f. Fl. Ind. (1768) 104 (type!). Quis qualis Rumph. Herb. Amb. 5: 71, t. 38.

This species is not represented in our Amboina collections. So far as the original Linnean description shows, the genus and the species were based wholly on Rumphius, although he may have had botanical material from India or Malaya. The form figured by Rumphius is certainly the common and widely distributed Malayan and Philippine form that is currently called *Quisqualis indica* Linn. The Linnean reduction has been fol-

^{*} Retained name, Brussels Congress; Adamaram Adans. (1763) is older.

lowed by most authors, but Burman f., Fl. Ind. (1768) 104, based his *Quisqualis pubescens* wholly on the Rumphian *Quisqualis*, and his var. *glabra* l. c. t. 28, f. 2, on Javan specimens. *Quisqualis pubescens* Burm. f. is thus an exact synonym of the older *Q. indica* Linn. Poiret, in Lam. Encycl. 6 (1804) 43, referred the Rumphian figure to *Quisqualis glabra* Burm. f., which likewise is a synonym of *Q. indica* Linn.

MYRTACEAE

PSIDIUM Linnaeus

PSIDIUM GUAJAVA Linn. Sp. Pl. (1753) 470.

Psidium pomiferum Linn. Sp. Pl. ed. 2 (1762) 672.

Psidium pyriferum Linn. l. c. 672.

Psidium cujavus Linn. in Stickman Herb. Amb. (1754) 7, Amoen. Acad. 4 (1759) 119 (type!).

Cujavus domestica Rumph. Herb. Amb. 1: 140, t. 47.

Cujavus agrestis Rumph. Herb. Amb. 1: 142, t. 48.

Cujavus silvestris Rumph. Herb. Amb. 1: 143.

Amboina, Robinson Pl. Rumph. Amb. 202, July 31, 1913, on hills in the vicinity of the town of Amboina.

The three forms described by Rumphius are all apparently referable to *Psidium guajava* Linn., the two forms figured representing the one with the pyriform fruit (*Cujavus domestica* Rumph.), the other with the ovoid or ellipsoid fruit (*Cujavus agrestis* Rumph., the type of *Psidium cujavus* Linn.). These forms have been recognized by some authors as distinct species, by others as varieties of *Psidium guajava* Linn. Both figures were originally reduced by Linnaeus, in Stickman Herb. Amb. (1754) 7; t. 47 to *Psidium guajava* Linn. and t. 48 to *Psidium cujavus* Linn., the latter figure being the whole basis of the latter species. Following current modern usage both *Psidium pomiferum* Linn. and *Psidium pyriferum* Linn. are here considered as synonyms of *Psidium guajava* Linn.

PSIDIUM CUJAVILLUS Burm. f. Fl. Ind. (1768) 114.

Psidium pumilum Vahl Symb. 2 (1791) 56.

Psidium angustifolium Lam. Encycl. 3 (1789) 17.

Cujavillus Rumph. Herb. Amb. 1: 145, t. 49.

Amboina, Way tommo, Robinson Pl. Rumph. Amb. 203, September 25, 1913, in waste places at low altitudes, locally known as guayawas china.

Psidium cujavillus Burm. f. was based primarily on a Javan specimen, and Psidium pumilum Vahl on one from Ceylon, although both authors cite Cujavillus Rumph. as a synonym, and Burman f. took his specific name from Rumphius. By some

authors the species has been erroneously reduced to *Psidium* guajava Linn. Lamarck also cites Cujavillus Rumph, in the original description of *Psidium* angustifolium Lam. Most authors who have had occasion to cite the Rumphian figure have placed Cujavillus under *Psidium* pumilum Vahl, but *Psidium* cujavillus Burm. f. is manifestly the same species and is a much older name. Pritzel, Ic. Bot. Index, has erroneously listed the figure of Cujavillus as Psidium decaspermum Linn. f.=Decaspermum fruticosum Forst.; while Henschel, with equal error, placed it under Nelitris jambosella Gaertn.=Timonius jambosella Thw. (See also under Decaspermum fruticosum Forst.)

DECASPERMUM Forster

DECASPERMUM FRUTICOSUM Forst. Char. Gen. (1776) 74, t. 37.

Psidium decaspermum Linn. f. Suppl. (1781) 252.

Eugenia polygama Roxb. Hort. Beng. (1814) 92, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 491.

Nelitris paniculata Lindl. Collect. Bot. (1821) 16.

Nelitris polygama Spreng. Syst. 2 (1825) 488.

Nelitris rubra Blume Mus. Bot. 1 (1849) 73, excl. syn. Lour., Poir., R. & S.

Nelitris alba Blume l. c. 74.

Decaspermum rubrum Baill. Hist. Pl. 6 (1877) 341.

Decaspermum paniculatum Kurz in Journ. As. Soc. Beng. 46² (1877) 61.

Caryophyllaster albus Rumph. Herb. Amb. 3: 211.

Caryophyllaster ruber Rumph. Herb. Amb. 3: 211, t. 136.

Amboina, Hitoe messen, Gelala, and Batoe gadjah, Robinson Pl. Rumph. Amb. 205, 206, 207, August to September, 1913, in forests and along streams, altitude 80 to 250 meters.

Caryophyllaster ruber Lour, was erroneously reduced by Loureiro, Fl. Cochinch. (1790) 144, to Antherura rubra Lour., a rubiaceous plant, to which the synonyms Psychotria rubra Poir. and P. antherura R. & S. pertain, although placed by Blume with Caryophyllaster ruber under Nelitris rubra Blume. Poiret, Roemer and Schultes, and Blume cite the Rumphian plant as a synonym of Psychotria rubra Poir., P. antherura R. & S., and Nelitris rubra Blume, respectively. The form described by Rumphius as Caryophyllaster albus I consider to be referable to the same species as Caryophyllaster ruber, and accordingly here reduce it with Nelitris alba Blume to Decaspermum fruticosum Forst. Decaspermum fruticosum Forst. and Psidium decaspermum Linn. f. have been confused with Timonius jambosella Thw., on account of Gaertner's erroneous reduction of Decaspermum fruticosum Forst, to Nelitris jambosella Gaertn.; the species figured by Gaertner is a true Timonius, the Ceylon

Timonius jambosella Thw. Gaertner's description is in part some species of Eugenia. The plant here considered appears in herbaria generally under the name Decaspermum paniculatum Kurz, but from material before me I can see no reason for considering it specifically distinct from the type of the genus, Decaspermum fruticosum Forst. The species is somewhat variable. It is a common and widely distributed plant in Malaya and Polynesia.

EUGENIA Linnaeus

EUGENIA CARYOPHYLLATA Thunb. Diss. (1788) 1.

Caryophyllus aromaticus Linn. Sp. Pl. (1753) 515, non Eugenia aromatica Berg.

Caryophyllus silvestris Teysm. ex Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 167 [Neue Schlüssel (1866) 25] (type!).

Caryophyllum Rumph. Herb. Amb. 2: 1, t. 1.

Caryophyllum regium Rumph. Herb. Amb. 2: 10, t. 2.

Caryophyllum silvestre Rumph. Herb. Amb. 2: 12, t. 3.

Amboina, Kati-kati, Robinson Pl. Rumph. Amb. 201, October, 1913, from cultivated trees, locally known as chenki.

I can see no valid reason for considering that more than one species is represented by the three forms figured and described by Rumphius, although Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 25, makes Caryophyllum silvestre Rumph. the type of Caryophyllus silvestris Teysm. The first figure represents the normal cultivated form, the second a form with somewhat fasciated inflorescences, while the third apparently represents the wild form of the same species. All three figures were originally reduced by Linneaus to Caryophyllus aromaticus Linn., in Stickman Herb. Amb. (1754) 8, Amoen. Acad. 4 (1759) 120, Sp. Pl. ed. 2 (1762) 735, and this reduction has been very generally accepted as the correct disposition of all three.

EUGENIA AQUEA Burm. f. Fl. Ind. (1768) 114 (type!).

Jambosa aquea DC. Prodr. 3 (1828) 288 (type!).

Cerocarpus aqueus Hassk. in Flora 25 (1842) Beibl. 36 (type!).

Eugenia mindanaensis C. B. Rob. in Philip. Journ. Sci. 4 (1909) Bot. 363.

Jambosa aquea Rumph. Herb. Amb. 1: 126, t. 38, f. 2.

Jambosa aquea altera Rumph. Herb. Amb. 1: 126.

Amboina, Hoenoet, $Robinson\ Pl.\ Rumph.\ Amb.\ 192,$ from cultivated trees, locally known as $jambu\ ayer.$

Jambosa aquea Rumph. is the whole basis of Eugenia aquea Burm. f. and is generally cited in botanical literature under Jambosa aquea DC. It was erroneously referred by Lamarck to Eugenia javanica Lam. and by Pritzel to Eugenia racemosa

Linn. Eugenia mindanaensis C. B. Rob., described from Mindanao specimens, is manifestly identical with Eugenia aquea Burm. f. This reduction had been indicated by Doctor Robinson in the herbarium of the Bureau of Science before his departure for Amboina in June, 1913.

EUGENIA CUMINI (Linn.) comb. nov.

Myrtus cumini Linn. Sp. Pl. (1753) 471.

Eugenia jambolana Lam. Encycl. 3 (1789) 198.

Calyptranthes jambolana Willd. in Usteri Ann. 17 (1796) 23.

Eugenia obtusifolia Roxb. Hort. Beng. (1814) 37, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 485.

Syzygium jambolanum DC. Prodr. 3 (1828) 259.

Syzygium cumini Skeels in U. S. Dept. Agr. Bur. Pl. Ind. Bull. 248 (1912) 25.

Jambosa ceramica Rumph. Herb. Amb. 1: 130, t. 41.

Jambolana Rumph. Herb. Amb. 1: 131, t. 42.

This species is not represented in our Amboina collections, but Rel. Robins. 2448 from Macassar, Celebes, July 11, 1913, is typical Jambolana Rumph. Linnaeus, in Stickman Herb. Amb. (1745) 7, Amoen. Acad. 4 (1759) 119, reduced Jambolana, with doubt, to Jambolifera pedunculata Linn., in which he was followed by Burman f., Lamarck, Loureiro, Murray, and Pritzel. It has been cited by various authors under Eugenia jambolana Lam., Calyptranthes jambolana Willd., Eugenia obtusifolia Roxb., and Syzygium jambolanum DC., and is the type of var. β of the last in DC. Prodr. 3 (1828) 260.

I am now of the opinion that Myrtus cumini Linn. supplies the oldest valid specific name for this species. Jambolifera pedunculata Linn., Sp. Pl. (1753) 349, was based primarily on Fl. Zeyl. 139, and the specimen in Hermann's herbarium is Acronychia laurifolia Blume.* The description in Flora Zeylanica applies to Acronychia laurifolia, not to Eugenia cumini, but the name and the synonyms Jambolones and Jambolons apply to Eugenia cumini. It is clear, however, that Linnaeus's later conception of Jambolifera pedunculata was as Eugenia cumini rather than Acronychia laurifolia, as shown by his reduction of Jambolana Rumph, and the reference to Plukenet added in the Mantissa 2 (1771) 371. I believe, however, that the original description and specimen should stand as representing Jambolifera pedunculata Linn. and that it goes with Acronychia laurifolia Blume as a synonym. Myrtus cumini Linn, was based wholly on Fl. Zeyl. 185, and the description and the specimen

^{*} See Trimen in Journ. Linn. Soc. 24 (1887) 140

in Hermann's herbarium is Eugenia jambolana Lam. The specific names, cumini and jambolifera, were interchanged between Eugenia and Acronychia.

I can see no reason for considering Jambosa ceramica Rumph. to be other than Eugenia cumini (Linn.) Merr. Linnaeus placed it under Myrtus cumini Linn., and Willdenow placed it under Calyptranthes caryophyllifolia Willd., both synonyms of Eugenia cumini (Linn.) Merr. Lamarck, Encycl. 3 (1789) 199, placed it under Eugenia cymosa Lam., a species based primarily on specimens from the Isle of France. At any rate Jambosa ceramica Rumph. is not Eugenia cymosa Lam. as Lamarck's species is currently interpreted.

EUGENIA JAVANICA Lam. Encycl. 3 (1789) 200.

Jambosa silvestris parvifolia Rumph. Herb. Amb. 1: 129, 2: t. 40.

In all copies of the Herbarium Amboinense, t. 40 of volume one and two are transposed; the plate in volume one corresponds to Radix deipariae spuria Rumph. Herb. Amb. 2: 127 and is Gmelina villosa Roxb., while the plate in volume two corresponds to Jambosa silvestris parvifolia Rumph. Herb. Amb. 1: 129 and is the species here considered (see under Gmelina villosa Roxb., p. 454). Perhaps the chief reason why the description and figure as given by Rumphius have never been properly placed was due to this transposition of the plates, which is mentioned in the Auctuarium (Herb. Amb. 7: 3). The illustration seems to me to be a fairly typical representation of Eugenia javanica Lam.; and I have made this reduction with considerable confidence, although I have seen no botanical material from Amboina that I would refer to this species.

EUGENIA SUBGLAUCA Koord. & Valeton in Bull. Inst. Bot. Buitenz. 2 (1899) 8, var.

Jambosa litorea Rumph. Herb. Amb. 3: 81, t. 53.

AMBOINA, Amahoesoe and Hoenoet, Robinson Pl. Rumph. Amb. 193, 196, September and October, 1913, on cliffs near the seashore, locally known as jambu ayer and jambu puti.

No previous reduction of Jambosa litorea Rumph. has been suggested, other than Henschel's statement that it pertained to the Myrtaceae. The description and figure manifestly pertain to Eugenia, a species in the group with Eugenia javanica Lam., E. colubcob C. B. Rob., and E. subglauca Koord. & Valeton. The Amboina specimens, which certainly represent Jambosa litorea Rumph., differ from the Javanese Eugenia subglauca Koord. & Val. in their leaves, which are more rounded at the

base and relatively somewhat broader and thicker. Even if eventually distinguished as a valid species, it must certainly be placed near the Javanese one.

EUGENIA RUMPHII sp. nov. § Syzygium.

Arbor rubra III Rumph. Herb. Amb. 3: 76.

AMBOINA, Hitoe messen, Robinson Pl. Rumph. Amb. 199 (type), 200, November 6, 1913, in forests, altitude about 175 meters, locally known as kayu mera.

Arbor glabra circiter 16 m alta, ramis ramulisque teretibus vel ramulis obscure rotundato-angulatis; foliis obovatis ad obovato-ellipticis, usque ad 10 cm longis, apice latissime rotundatis interdum retusis vel obscurissime apiculatis, basi angustatis, cuneatis, margine revolutis, supra olivaceis, valde nitidis, subtus pallidis, haud puncticulatis, nervis utrinque numerosis, tenuibus; inflorescentiis corymbosis, terminalibus, circiter 5 cm longis; floribus plerumque in triadibus dispositis, omnibus breviter pedicellatis, calycis circiter 7 mm longis, anguste infundibuliformibus, subtruncatis, calyptra 5 mm diametro.

An entirely glabrous tree about 16 m in height, the branches and branchlets brownish, smooth, terete or sometimes with obscure rounded angles. Leaves coriaceous, obovate to obovateelliptic, 5 to 10 cm long, 3 to 5.5 cm wide, apex broadly rounded, often retuse, sometimes obscurely apiculate, base gradually narrowed, cuneate, margins recurved, the upper surface dark-olivaceous, strongly shining, the lower pale, dull, not puncticulate; lateral nerves numerous, slender, spreading, densely arranged, the primary ones but little more prominent than the secondary, reticulations obsolete or nearly so; petioles about 1 cm long. Inflorescence terminal, corymbose, about 5 cm long and wide, branches from the base, the branches ascending, the flowers white, mostly in triads on the ultimate branchlets, all pedicelled. the bracteoles broadly ovate, rounded, thick, about 1 mm long, the pedicels stout, 2 to 3 mm long. Calyx narrowly funnelshaped, about 7 mm long, truncate or with obscure lobes. lyptra 5 mm in diameter, broadly ovoid, rounded. indefinite, 5 to 10 mm long.

This is a sufficiently characteristic species, which I cannot refer to any previously described form. It is readily recognizable by its densely nerved, coriaceous, obovate to obovate-elliptic, broadly rounded, shining leaves, these often retuse at the apex. No previous attempt has been made to determine the status of Arbor rubra III of Rumphius, other than Hasskarl's reduction of it to the Myrtaceae; it is undoubtedly Eugenia rumphii.

EUGENIA STIPULARIS (Blume) Miq. Fl. Ind. Bat. 1 1 (1855) 441.

Gelpkea stipularis Blume Mus. Bot. 1 (1849) 88.

Jambosa silvestris ayer utan Rumph. Herb. Amb. 1: 129.

Amboina, Lateri, Robinson Pl. Rumph. Amb. 191, August 25, 1913, in forests, altitude about 200 meters, locally known as jambu utan and kayu jambu jambu.

Hamilton, Mem. Wern. Soc. 5 ² (1826) 338, placed this under Eugenia laeta Ham., the description of which, however, was based on an Indian specimen. Blume, Mus. Bot. 1 (1849) 104, followed Hamilton in this reduction of Jambosa silvestris ayer utan and cites Jambosa linearis Korth. as a synonym. The description given by Rumphius certainly does not apply to Eugenia laeta Ham. nor to Jambosa linearis Korth., but does apply fairly closely to Eugenia stipularis Miq., the type of which was from Amboina.

EUGENIA CELEBICA (Blume) comb. nov.

Jambosa celebica Blume Mus. Bot. 1 (1849) 107. Jambosa silvestris s. biawas Rumph. Herb. Amb. 1: 128?

The reduction of this Celebes form, very imperfectly described by Rumphius, merely follows Blume's suggestion. It may or may not be the correct disposition of it, although the form that Rumphius described is certainly a *Eugenia* of the section *Jambosa*.

EUGENIA JAMBOS Linn. Sp. Pl. (1753) 470.

Jambosa vulgaris DC. Prodr. 3 (1828) 286. Jambosa rosacea Rumph. Herb. Amb. 1: 123.

The description certainly applies to the rose apple, Eugenia jambos Linn. (Jambosa vulgaris DC.), where Jambosa rosacea Rumph. has been referred by Henschel, Blume, DeVriese, Miquel, and Hasskarl.

EUGENIA sp. aff. jambos Linn.?

Jambosa (sylvestris) alba Blume Mus. Bot. 1 (1849) 94, non Don, nec Eugenia alba Roxb.

Jambosa silvestris alba Rumph. Herb. Amb. 1: 127, t. 39.

Rumphius's figure represents a characteristic species, and when once collected in Amobina botanical material should be readily connected with it. *Jambosa silvestris alba* Rumph. was originally reduced by Linnaeus to *Eugenia jambos* Linn., in Stickman Herb. Amb. (1754) 7, Amoen. Acad. 4 (1759) 119, Syst. ed. 10 (1759) 1055, Sp. Pl. ed. 2 (1762) 672; and in this manifestly erroneous reduction he was followed by Burman f., Lamarck, Willdenow, Loureiro, Roxburgh, and Persoon. Wight

and Arnott, Prodr. (1834) 332, with doubt, reduced it to Jambosa aquea DC.; Hasskarl placed it under Eugenia macrophylla DC.; and Berg. erroneously placed it under Jambosa vulgaris DC. Blume, Mus. Bot. 1 (1849) 93, has maintained it as a valid species, Jambosa alba, but the specific name used by him is invalid in both Eugenia and Jambosa.

EUGENIA MALACCENSIS Linn. Sp. Pl. (1753) 470.

Jambosa malaccensis DC. Prodr. 3 (1828) 286.

Myrtus malaccensis Spreng. Syst. 2 (1825) 484.

Jambosa purpurascens DC. Prodr. 3 (1828) 286.

Eugenia purpurea Roxb. Hort. Beng. (1814) 37, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 483.

Jambosa domestica Blume Mus. Bot. 1 (1849) 91.

Jambosa domestica Rumph. Herb. Amb. 1: 121, t. 37.

Jambosa nigra Rumph. Herb. Amb. 1: 125, t. 38, f. 1.

Amboina, Paso, Robinson Pl. Rumph. Amb. 194, October 29, 1913, from cultivated trees, locally known as jambu ruttun.

Jambosa domestica Rumph, was first reduced to Eugenia malaccensis Linn. by Linnaeus, Syst. ed. 10 (1759) 1055, and Jambosa nigra Rumph, was reduced to the same species by Linnaeus. in Stickman Herb. Amb. (1754) 7; both reductions apparently are correct. Neither figure can be considered as good, however. The Rumphian names have been cited by various authors under one or another of the synonyms given above. The several forms named and described by Rumphius were made by Blume, Mus. Bot. 1 (1849) 91, the types of several varieties of Jambosa domestica Blume=Eugenia malaccensis Linn., as follows: Jambosa domestica II minor Rumph.=var. minor Blume: Jambosa domestica rosacea Rumph.=var. rosacea Blume; Jambosa domestica calapparia Rumph.=var. calapparia Blume; and Jambosa nigra Rumph.=var. nigra Blume. They are apparently all variants of Eugenia malaccensis Linn., which like most cultivated fruit trees presents a considerable range of variation in the color, size, and other characters of its fruits.

EUGENIA MELASTOMIFOLIA (Blume) comb. nov.

Jambosa melastomifolia Blume Mus. Bot. 1 (1849) 102.

Arbor rubra II Rumph. Herb. Amb. 3: 76.

Amboina, Lateri, Robinson Pl. Rumph. Amb. 198, September 5, 1913, in forests, altitude about 200 meters, locally known as daun jambu jambu.

The specimen, which presents very young flowers, appears to agree with both Rumphius's and with Blume's descriptions, *Jambosa melastomifolia* Blume having been based on Amboina specimens collected by Zippel. I do not agree with Miquel,

Fl. Ind. Bat. 1¹ (1855) 522, in reducing Jambosa melastomifolia Blume to Jambosa bifaria Wight.

EUGENIA sp.

Arbor rubra I Rumph. Herb. Amb. 3: 74, t. 47.

This is a sufficiently characteristic species of *Eugenia* of the section Syzygium; it is, however, not represented in our Amboina collections. No botanist has suggested its determination beyond the genus. Lamarck reduced it to *Eugenia* sp., and Teysmann expressed the opinion that it is, with doubt, a *Jambosa*. The figure looks suspiciously like *Eucalyptus deglupta* Blume (see p. 401), but although the bark is described as peeling off in thin flakes, a character found in many species of *Eugenia*, the description of the fruits and of the odor and taste of the leaves definitely removes it from *Eucalyptus*.

EUGENIA sp.

Arbor rubra I angustifolia Rumph. Herb. Amb. 3: 75, t. 48.

This is a characteristic species of *Eugenia* of the section *Jambosa*, not represented in our Amboina collections. No suggestions have been made by other botanists as to its possible or probable identity. In the absence of material for comparison with the various named species from the Moluccas, no suggestion can be made as to its proper disposition.

EUGENIA sp.

Folium intinctus Rumph. Herb. Amb. 3: 202.

Loureiro, Fl. Cochin. (1790) 231, mentions this under Jambolifera odorata Lour. (=Acronychia?), with which it has nothing in common. Henschel, Vita Rumph. (1833) 160, places it, with doubt, under Cyminosma odorata DC., which is merely a new name for Jambolifera odorata Lour. Rumphius's description conforms in all respects to Eugenia and probably refers to some species of this genus.

EUGENIA sp.

Arbor rubra II saxatilis Rumph. Herb. Amb. 3: 76.

Further determination of this form is impossible from the data and material at present available.

EUGENIA sp.

Arbor rubra IV Rumph. Herb. Amb. 3: 77.

The form described is probably a *Eugenia*, but its exact status is indeterminable from data at present available.

EUGENIA sp.?

Perticaria ferrea parvifolia Rumph. Herb. Amb. 3: 80, t. 52.

The figure resembles *Eugenia* in many characters, yet if the flowers be correctly delineated, the plant can be no *Eugenia*, and hardly a myrtaceous one. Its status is indeterminable from material and data at present available.

EUGENIA sp.?

Perticaria ferrea latifolia Rumph. Herb. Amb. 3: 80.

This may or may not belong in the same genus with the preceding one. Its status is entirely uncertain, and it may not even belong in the *Myrtaceae*.

EUGENIA sp.

Jambosa silvestris alba Rumph. Herb. Amb. 3: 81.

This is a *Eugenia* of the section *Jambosa*, but its further identity is entirely doubtful.

METROSIDEROS * Banks

METROSIDEROS VERA Roxb. Hort. Beng. (1814) 37 (type!); Lindl. Collect. Bot. (1821) t. 18.

Nania vera Mig. Fl. Ind. Bat. 1.1 (1855) 400.

Syncarpia vertholenii Teysm. & Binn. in Nat. Tijdschr. Ned. Ind. 2 (1851) 307, Nederl. Kruidk. Arch. 3 (1855) 411.

Metrosideros vera parvifolia Rumph. Herb. Amb. 3: 16, t. 7. Metrosideros vera latifolia Rumph. Herb. Amb. 3: 16, 19.

This species is not represented in our Amboina collections. *Metrosideros vera*, usually accredited to Lindley as its author, should be accredited to Roxburgh instead. The original publication of the name was based wholly on Rumphius by citation of the illustration, in Hortus Bengalensis (1814) 37.† It was later described by Roxburgh, Fl. Ind. ed. 2, 2 (1832) 477, from specimens cultivated at Calcutta, which had been introduced into the botanic garden from Amboina. *Syncarpia vertholenii* Teysm. & Binn. was described from Amboina specimens, and its authors reduced to it *Metrosideros vera parvifolia* Rumph. The first reduction was that made by Loureiro, Fl. Cochinch. (1790) 309, to *Opa metrosideros* Lour. *Opa metrosideros* Lour. is not at all *Metrosideros vera* Roxb., but is a synonym of *Raphiolepis indica* (Linn.) Lindl., of the *Rosaceae*. The form described by Rumphius as *Metrosideros vera latifolia* does not appear to

^{*} Retained name, Brussels Congress; Nani Adans. (1763) is older.

[†] See C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 414.

be specifically distinct from the one described as *Metrosideros* vera parvifolia, although a more extended exploration of the Moluccas may show that two distinct species are involved.

EUCALYPTUS L'Héritier

EUCALYPTUS DEGLUPTA Blume Mus. Bot. 1 (1849) 83.

Populus deglubata Reinw. ex Blume l. c. in syn.

Eucalyptus versicolor Blume Mus. Bot. 1 (1849) 84 (type!).

Eucalyptus multiflora Rich ex A. Gray Bot. Wilkes U. S. Explor. Exped. (1854) 554.

Eucalyptus naudiniana F. Muell. in Austral. Journ. Pharm. (1886) 239, Bot. Centralbl. 28 (1886) 179.

Eugenia binacag Elm. Leafl. Philip. Bot. 7 (1914) 2351.

Eucalyptus binacag Elm. l. c. 8 (1915) 2776.

Arbor versicolor Rumph. Herb. Amb. 3: 122, t. 80.

Rumphius's material, on which his figure and description of Arbor versicolor were based, was from Ceram, not from Am-The description and the figure, as far as they go, are unmistakably a Eucalyptus. I feel quite confident that Eugenia deglupta Blume, from Celebes; E. versicolor Blume, from Ceram; E. multiflora Rich and E. binacag Elm., of Mindanao; and E. naudiniana F. Muell., of the Bismarck Archipelago, are all referable to a single species, which is now definitely known from a half-dozen localities in Mindanao, from New Guinea, and from the Bismarck Archipelago, and with the inclusion of Blume's species, from Celebes and Ceram. There is not a character given by Blume for either Eucalyptus versicolor or E. deglupta by which the two can be definitely distinguished from each other or from Eucalyptus naudiniana F.-Muell. Eucalyptus moluccana Roxb., as described, must represent a different species, at least entirely different from Eucalyptus naudiniana F.-Muell. and the Philippine synonyms cited here. Eucalyptus versicolor Blume is based wholly on Rumphius's description of Arbor versicolor, and it is to be noted that Blume, by error, cites t. 53 instead of t. 80 as representing the species. The latter figure is Eugenia subglauca Koord. & Valeton, as I have here determined it (see p. 395).

Eucalyptus sarassa Blume, Mus. Bot. 1 (1849) 84, unaccompanied by any word of description, was based on Kaju sarassa Rumph., incidentally mentioned by Rumphius, Herb. Amb. 3: 122, following the description of Arbor versicolor. It is indeterminable from any data now available, and there is little or no evidence that it belongs to Eucalyptus.

LEPTOSPERMUM Forster

LEPTOSPERMUM FLAVESCENS Smith in Trans. Linn. Soc. 3 (1797) 262.

Leptospermum amboinense Blume Bijdr. (1826) 1100.

Leptospermum porophyllum Cav. Ic. 4 (1797) 17, t. 330, f. 2.

Melaleuca thea Wendl. Sert. Hannov. (1795-98) 24, t. 13?

Leptospermum thea Willd. Sp. Pl. 2 (1799) 949?

Macklottia amboinensis Korth. in Nederl. Kruidk. Arch. 1 (1847) 196.

Myrtus amboinensis Rumph. Herb. Amb. 2: 77, t. 18.

Amboina, Hoetoemoeri road, Robinson Pl. Rumph. Amb. 204, September 30, 1913, on lightly forested hillsides, altitude about 250 meters.

Myrtus amboinensis Rumph. has been very generally reduced to Leptospermum amboinense Blume, but this species does not appear to be specifically distinct from the much older Leptospermum flavescens Smith. The younger Linnaeus reduced it to Melaleuca virgata Linn. f., Suppl. (1781) 343; which, however, was based on Leptospermum virgatum Forst.=Baeckea virgata Andr., in which he was followed by Willdenow and by Lamarck. Burman f., Fl. Ind. (1768) 115, had already referred it to Myrtus communis Linn., an entirely erroneous disposition of it. Leptospermum thea (Wendl.) Willd. may prove to be the oldest valid name for the species.

MELALEUCA * Linnaeus

MELALEUCA LEUCADENDRA Linn. Mant. 1 (1767) 105.

Myrtus leucadendra Linn. in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 120, Syst. ed. 10 (1759) 1056, Sp. Pl. ed. 2 (1762) 676 (type!).

Myrtus saligna Burm. f. Fl. Ind. (1768) 116, saltem quoad syn. Rumph,

Melaleuca cajuputi Roxb. Hort. Beng. (1814) 59 (type!).

Melaleuca saligna Blume Mus. Bot. 1 (1849) 66, non Schauer.

Melaleuca viridiflora Blume Bijdr. (1026) 1099, var. angustifolia Blume l. c.

Melaleuca trinervis Ham. ex Henschel Vita Rumph. (1833) 147 (type!).

Melaleuca minor Sm. in Rees Cyclop. 23 (1813) no. 2.

Arbor alba major Rumph. Herb. Amb. 2: 72, t. 16.

Arbor alba minor Rumph. Herb. Amb. 2: 76, t. 17.

AMBOINA, Soja road, Robinson Pl. Rumph. Amb. 208, August 1, 1913, on open hillsides, altitude about 150 meters, locally known as kayu puti.

Myrtus leucadendra Linn. as originally published included both t. 16 and t. 17 of Rumphius. Myrtus leucadendra Linn., Melaleuca leucadendra Linn., Melaleuca cajuputi Roxb., M. trinervis Ham., and possibly M. minor Sm. are all typified by the Rumphian descriptions and figures. Some authors have assumed that t. 17, f. 2, represents a distinct species, which has

^{*} Retained name, Vienna Code; Cajuputi Adans. (1763) is older.

been indicated as Melaleuca minor Sm. and M. trinervis Ham., but which seems to be merely a form of Melaleuca leucadendra Linn. Cajukelam Rumph. Herb. Amb. 2: 74 may or may not be identical with Melaleuca leucadendra Linn. Nearly all authors have cited Arbor alba Rumph. under Melaleuca leucadendron Linn., but Linnaeus's original spelling is here retained, as he apparently never adopted the form "leucadendron." Melaleuca leucadendra Linn. is an exceedingly variable species as already noticed by Bentham.

MELASTOMATACEAE

OTANTHERA Blume

OTANTHERA CYANOIDES (Sm.) Triana in Trans. Linn. Soc. 28 (1871) 55.

Melastoma cyanoides Sm. in Rees Cyclop. 23 (1813) no. 56, 57.

Melastoma moluccanum Blume Bijdr. (1826) 1078.

Fragarius ruber Rumph. Herb. Amb. 4: 135, t. 71.

AMBOINA, Batoe merah, Robinson Pl. Rumph. Amb. 512, July 31, 1913, on wooded hillsides, altitude about 10 meters.

Melastoma cyanoides Sm. was based on a specimen collected in Amboina by Mr. Christopher Smith in October, 1796, Fragarius ruber Rumph, and Katou-Kadali Rheede being cited as synonyms: Rheede's synonym must be excluded as it is not the same as the Amboina plant. Linnaeus erroneously reduced Fragarius ruber to Melastoma asperum Linn., in Stickman Herb. Amb. (1754) 17, Amoen. Acad. 4 (1759) 127, Syst. ed. 10 (1759) 1022, Sp. Pl. ed. 2 (1762) 560, in which he was followed by numerous authors. Murray, Syst. (1771) 336, erroneously reduced it to Melastoma malabathricum Linn. Blume reduced it to Melastoma moluccanum Blume in the original description of that species and later cited it under Otanthera moluccana Blume, both of which are manifestly synonyms of Otanthera cyanoides (Sm.) Triana. I am indebted to Sir David Prain, director of the Royal Gardens, Kew, England, for a transcript of Smith's original description and for a comparison of Robinson's specimen with the type of Smith's species, which is preserved in the herbarium of the Linnean Society, London.

MELASTOMA Linnaeus

MELASTOMA POLYANTHUM Blume in Flora 14 (1831) 480.

Fragarius niger Rumph. Herb. Amb. 4: 137, t. 72.

Amboina, Batoe mera, Robinson Pl. Rumph. Amb. 508, July 31, 1913, on hillsides at low altitudes, locally known as biroro and daun biroro.

The specimen is apparently referable to Melastoma polyan-

thum Blume as currently interpreted, although the limits of Blume's species and the differential characters by which it can be distinguished from other forms are not at all clear. Linnaeus originally reduced Fragarius niger Rumph. to Melastoma octandrum Linn., in Stickman Herb. Amb. (1754) 17, Amoen. Acad. 4 (1759) 127, an entirely erroneous disposition of it. Later, Mant. 2 (1771) 381, he transferred it to Melastoma malabathricum Linn., to which Melastoma polyanthum Blume is certainly closely allied. This reduction has been accepted by numerous authors, including Cogniaux in the latest monograph of the family, DC. Monog. Phan. 7 (1891) 349. Loureiro placed it with doubt under Melastoma septemnerve Lour., and Blume himself transferred it to Melastoma polyanthum Bl., the latter certainly the most satisfactory position for it.

Another specimen from Amboina, Rel. Robins. 2027, from Kati-kati, altitude 80 meters, may represent a form of Melastoma polyanthum Blume, and at the same time may represent Fragarius niger Rumph., at least in part. It differs from the specimen cited above under Melastoma polyanthum Blume in its somewhat longer calyx-lobes and in other minor characters.

MELASTOMA sp.

Fragarius ruber grandifolius Rumph. Herb. Amb. 4: 136.

Amboina, Mahiya, Robinson Pl. Rumph. Amb. 511, October 3, 1913, in light woods at an altitude of about 350 meters.

The specimen almost certainly represents the form described by Rumphius as Fragarius ruber grandifolius, and at the same time probably represents an undescribed species of Melastoma. Unfortunately incomplete material is represented, the petals and stamens having fallen. The branches, branchlets, and leaves are supplied with scattered, minute, appressed scales, and the calyx-tube is densely covered with pale, spreading, curved, linear-lanceolate, acuminate, long, very slightly fimbriate, rather stiff paleae. The flowers are terminal and solitary. It seems to be most closely allied to the Philippine Melastoma lanaense Merr., but is very different from that species.

MEDINILLA Gaudichaud

MEDINILLA CRISPATA (Linn.) Blume in Flora 14 (1831) 517.

Melastoma crispatum Linn. Sp. Pl. ed. 2 (1762) 560 (type!). Funis muraenarum mas Rumph. Herb. Amb. 5: 66, t. 35, f. 1.

Amboina, Kati-kati and Gelala, Robinson Pl. Rumph. Amb. 509, 510, October 19 and September 19, 1913, climbing on trees, altitude 40 to 70 meters.

This is a very characteristic species; it is well figured by Rumphius, and accordingly its synonymy is very simple. Funis muraenarum mas Rumph. is the whole basis of Melastoma crispatum Linn., which was transferred to Medinilla by Blume in 1831. Linnaeus first erroneously reduced it to Melastoma malabathricum Linn., in Stickman Herb. Amb. (1754) 19, but soon recognized the error and in the reprint of Stickman's paper, Amoen. Acad. 4 (1759) 128, he excluded the reduction to Melastoma malabathricum and still later, in 1762, made the Rumphian description and figure the type of Melastoma crispatum Linn.

MEDINILLA MACROCARPA Blume in Flora 14 (1831) 510; Rumphia 1 (1835) 14, t. 2.

Frutex muraenarum femina Rumph. Herb. Amb. 5: 67, t. 35, f. 2.

AMBOINA, Lateri, Robinson Pl. Rumph. Amb. 569, August 25, 1913, in forests, altitude about 250 meters.

This is certainly the correct disposition of *Frutex muraena-rum femina* Rumph., the reduction having been made by Blume, whose description and figure, however, were based on Amboina specimens collected by Zippel.

MEDINILLA sp.

Funis muraenarum III Rumph. Herb. Amb. 5: 67.

This should be a very characteristic species, judging from Rumphius's description, which calls for a vine with solitary (that is, alternate) leaves, 8 to 10 inches long and 5 to 6 inches wide, long-acuminate, with 10 or 11 oblique nerves and many transverse nervules. Blume, Rumphia 1 (1835) 15, referred it to *Medinilla crassinervia* Blume, with which, however, it does not at all agree. Its exact status must await further botanical exploration of Amboina.

ASTRONIA Noronha

ASTRONIA PAPETARIA Blume in Flora 14 (1831) 526; Rumphia 1 (1835) 20, t. 6.

Pharmacum papetarium Rumph. Herb. Amb. 4: 134, t. 69.

Amboina, Way tommo and Soja, Robinson Pl. Rumph. Amb. 513, 514, August 19 and October 14, 1913, in light forests, altitude 50 to 325 meters, locally known as daun tabal.

Blume's description and figure were based on specimens collected in Amboina by Zippel, and he reduced here *Pharmacum papetarium* Rumph., which is certainly the correct disposition of it, and a reduction that has been accepted by all subsequent authors. The species is known only from Ternate and Amboina.

OENOTHERACEAE

JUSSIEUA Linnaeus

JUSSIEUA SUFFRUTICOSA Linn. Sp. Pl. (1753) 388.

Herba vitilaginum Rumph. Herb. Amb. 6: 49, t. 21, f. 1.

AMBOINA, Robinson Pl. Rumph. Amb. 259, July 25, 1913, in wet places near the town of Amboina.

Herba vitilaginum was reduced by Linnaeus to Jussieua suffruticosa, in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, but in his Systema, ed. 10 (1759) 1021, he erroneously cited t. 41 instead of t. 21. In the second edition of his Species Plantarum (1762) 556 he erroneously placed it under Jussieua erecta Linn., an American species. By other authors it has been placed under Jussieua angustifolia Lam. Encycl. 3 (1789) 331, Lamarck himself citing the Rumphian description and figure as possibly or probably representing his species. The actual type was a Javan specimen, and the species does not appear to be specifically distinct from the older J. suffruticosa Linn.

ARALIACEAE

OSMOXYLON Miquel

OSMOXYLON UMBELLIFERUM (Lam.) comb. nov.

Aralia umbellifera Lam. Encycl. 1 (1783) 224 (type!).

Hedera umbellifera DC. Prodr. 4 (1830) 262 (type!).

Hedera amboinensis DC. ex Boerl. in Ann. Jard. Bot. Buitenz. 6 (1887) 124, in syn.

Gastonia saururoides Roxb. Hort. Beng. (1814) 90, nomen nudum.

Gastonia sasuroides Roxb. Fl. Ind. ed. 2, 2 (1832) 408.

Osmoxylon amboinense Mig. Ann. Mus. Bot. Lugd.-Bat. 1 (1863) 6.

Pseudo-Sandalum amboinense Rumph. Herb. Amb. 2: 54, t. 12.

This species is not represented in our Amboina collections and is not definitely known to be represented by Amboina specimens in any herbarium. *Pseudo-sandalum amboinense* Rumph., which is excellently figured, is the whole basis of *Aralia umbellifera* Lam.; and this, being the earliest valid specific name for the species, is here adopted. The figure is cited by de Candolle and by Miquel, while Boerlage, Ann. Jard. Bot. Buitenz. 6 (1887) 124, confines *Osmoxylon amboinense* Miq. to the Amboina plant originally described and figured by Rumphius, redescribing the New Guinea specimen, cited by Miquel, as *Osmoxylon miquelii* Boerl. Amboina material is necessary for study and comparison, however, before the relationships of the two forms

can be satisfactorily determined. Gastonia sasuroides Roxb. (or saururoides) is a probable synonym, as suggested by Miquel; in literature generally it is given as G. saururoides Roxb., as originally printed in the Hortus Bengalensis. However, in Roxburgh's Flora Indica it is given as G. sasuroides. In the very short description the Rumphian figure is cited as being nearly allied, and the specific name was taken from the local name sasuru, cited by Rumphius. Roxburgh's type was from the Moluccas.

BOERLAGIODENDRON Harms

BOERLAGIODENDRON PALMATUM (Lam.) Harms in Engl. & Prantl Nat. Pflanzenfam. 3 * (1894) 31.

Aralia palmata Lam. Encycl. 1 (1783) 224 (type!).

Trevesia zippeliana Miq. Ann. Mus. Bot. Lugd. Bat. 1 (1863) 11.

Trevesia moluccana Miq. in Bonplandia 4 (1856) 137, Fl. Ind. Bat. 1^{1} (1857) 748.

Eschweileria palmata Zipp. ex Boerl. in Ann. Jard. Bot. Buitenz. 6 (1887) 116, t. 14.

Unjala bifida Reinw. ex Boerl. l. c.

Osmoxylon moluccanum Becc. Malasia 1 (1878) 195.

Osmoxylon zippelianum Becc. 1. c.

Folium polypi mas (et femina?) Rumph Herb. Amb. 4: 101, t. 43.

AMBOINA, Lateri, Robinson Pl. Rumph. Amb. 389, September 5, 1913, in light forests, altitude 20 meters; Soja, Robinson Pl. Rumph. Amb. 388, August 31, 1913, in forests, altitude 375 meters, locally known as papaya utan and poppya utan.

Folium polypi as figured and described by Rumphius is the whole basis of Aralia palmata Lam., which supplies the oldest valid specific name for this rather much-named species. All early authors, who had occasion to consider it, followed Lamarck in this reduction; but Miguel, overlooking the fact that the Rumphian figure and description typified Aralia palmata Lam., referred it to Trevesia moluccana Miq. The synonymy is given by Boerlage, Ann. Jard. Bot. Buitenz. 6 (1887) 116, who in taking up Zippel's unpublished name Eschweileria overlooked or ignored, as a synonym of Lecythis, the previous use of the same name by Martius for a South American genus of Lecythidaceae; Eschweilera Mart. is now recognized as a valid genus distinct from Lecythis. Harms accordingly proposed the new generic name Boerlagiodendron, no other being available for the plants Boerlage placed in Eschweileria Zipp. Boerlage gives an ample description of the species and an excellent illustration and cites specimens from Amboina, Banda, and Celebes.

SCHEFFLERA Forster

SCHEFFLERA sp.

Brassaia littorea Seem. Journ. Bot. 2 (1864) 244 (type!). Papaja litorea Rumph. Herb. Amb. 1: 150, t. 52.

This species is not represented in our Amboina collections. Brassaia littorea Seem. was based wholly on Rumphius's figure and description. As its status is entirely uncertain, no direct transfer is here made to Schefflera, where Papaja litorea Rumph. manifestly belongs. Walpers, Repert. 2 (1843) 430, reduced it to Aralia longifolia Reinw., the original publication of which I have not seen, but which is apparently the same as the Javanese Sciodaphyllum longifolium Blume; in Index Kewensis the latter is given as a synonym of Brassaia littorea Seem. It has also been referred to Paratropia longifolia DC. by DeVriese, Pl. Ind. Bat. Or. (1845) 89, and was mentioned by Miguel, Fl. Ind. Bat. 1 (1856-57) 760, following Paratropia macrostachya Miq., as a possible representative of Paratropia. Teysmann, cited by Hasskarl, Neue Schlüssel (1866) 20, thought that it might possibly be Paratropia macrostachya Miq. The species is such a characteristic one and has such large leaflets and long petioles, that it should be readily recognized when once collected in Amboina.

POLYSCIAS Forster

POLYSCIAS NODOSA (Blume) Seem. in Journ. Bot. 3 (1865) 181.

Aralia nodosa Blume Bijdr. (1826) 873.

Paratropia nodosa DC. Prodr. 4 (1830) 265.

Hedera nodosa Hassk. in Hoev. & De Vriese Tijdschr. Nat. Gesch. 10 (1843) 131.

Aralia umbraculifera Roxb. Hort. Beng. (1814) 22, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 108.

Eupteron nodosum Miq. in Bonplandia 4 (1856) 139; Fl. Ind. Bat. 11 (1857) 762.

Papaja silvestris Rumph. Herb. Amb. 1: 149, t. 53, f. 1.

Amboina, Ermes, Robinson Pl. Rumph. Amb. 386, August 9, 1913, on forested hillsides, altitude about 250 meters, locally known as pata tulan and patu tulong.

The figure is very poor and is scarcely recognizable as *Polyscias nodosa* Seem., yet the description applies unmistakably to this species. Willdenow, Sp. Pl. 2 (1799) 549, mislead by the very poor figure, erroneously referred it to *Bergera koenigii* Linn. Roxburgh, Fl. Ind. ed. 2, 2 (1832) 108, cites it as a synonym of his *Aralia umbraculifera*, which was described from specimens cultivated in the botanic garden at Calcutta, originating in the Moluccas, and which is an exact synonym of

Polyscias nodosa Seem. Miquel cites it as a synonym of Eupteron nodosum (Blume) Miq., while Seemann quotes it in the original transfer of the species to Polyscias as cited above.

NOTHOPANAX Miquel

NOTHOPANAX SCUTELLARIUM (Burm. f.) comb. nov.

Crassula scutellaria Burm. f. Fl. Ind. (1768) 78. Aralia cochleata Lam. Encycl. 1 (1783) 224 (type!).

Panax cochleatum DC. Prodr. 4 (1830) 253 (type!).

Panax scutellarioides Reinw. in Blume Bijdr. (1826) 880.

Nothopanax cochleatum Miq. Fl. Ind. Bat. 1^{1} (1857) 766.

Scutellaria prima Rumph. Herb. Amb. 4: 75, t. 31.

This commonly cultivated and characteristic shrub is not represented in our Amboina collections. The first post-Linnean description of the species seems to be that of Burman f., whose specific name is here adopted. Burman cites Scutellaria prima Rumph. as a synonym of his Crassula scutellaria, but by error cites the illustration as t. 30 instead of t. 31. Rumphius's figure and description are the whole basis of Aralia cochleata Lam., and hence of Panax cochleatum DC. and of Nothopanax cochleatum Miquel. The Rumphian figure has for the most part been cited in literature under the names Panax cochleatum DC. and Aralia cochleata Lam.

NOTHOPANAX TRICOCHLEATUM Miq. Fl. Ind. Bat. Suppl. (1862) 340.

Panax rumphii Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 220 (Neue Schlüssel 78) (type!).

Scutellaria secunda latifolia Rumph. Herb. Amb. 4: 76.

This cultivated form is not represented in our Amboina collections. Panax rumphii Hassk. was based wholly on the Rumphian description and has been overlooked by all subsequent authors; it is not included in Index Kewensis. From the description compiled by Hasskarl and from Rumphius's original and more ample description, I can see no reason for considering it other than Nothopanax tricochleatum Miq. The form described by Rumphius in this chapter as dauläe probably belongs in Nothopanax, but the description is too indefinite to warrant its certain reduction.

NOTHOPANAX PINNATUM (Lam.) Miq. Fl. Ind. Bat. 1 1 (1857) 766.

Panax pinnatum Lam. Encycl. 2 (1788) 715 (type!).

Panax? secundum Schultes Syst. 6 (1820) 215 (type!).

Polyscias rumphiana Harms in Engl. & Prantl Nat. Pflanzenfam 3 ° (1894) 45.

Scutellaria secunda angustifolia Rumph. Herb. Amb. 4: 76, t. 32.

This species is not represented in our Amboina collections.

A form that almost certainly represents the Rumphian plant is in cultivation in the botanic garden at Buitenzorg, Java. "XIII-J-31." which originated in the Moluccas. The Rumphian description and figure are the whole basis of Panax pinnatum Lam. and Panax secundum Schultes and hence of Nothopanax pinnatum Mig. Most authors have followed Lamarck and cite the Rumphian plant as Panax pinnatum Lam. The species is as yet very imperfectly known, and its relationship to several forms distinguished in comparatively recent years in horticultural literature is obscure, such as Aralia maculata Truff., Aralia guilfoylei Cogn. & March., etc. Polyscias rumphiana Harms was proposed by Harms in transferring the species to Polyscias, on account of the earlier Polyscias pinnata Forst. However, Schultes's name was available, although overlooked by Doctor Harms.

NOTHOPANAX FRUTICOSUM (Linn.) Miq. Fl. Ind. Bat. 1 (1857) 765.

Panax fruticosum Linn. Sp. Pl. ed. 2 (1763) 1513.

Scutellaria tertia Rumph. Herb. Amb. 4: 78, t. 33.

AMBOINA, Robinson Pl. Rumph. Amb. 387, September 25, 1913, cultivated or semicultivated, near the town of Amboina, locally known as pagar pagar.

The Rumphian name and figure are cited by Linnaeus in the original description of the species, and in this reduction he has been consistently followed by nearly all authors. I prefer, however, to follow Miquel in considering the species under *Nothopanax*. Harms, in Engl. and Prantl Nat. Pflanzenfam. 3 s (1894) 43–45, places all species of *Nothopanax* under *Polyscias*.

PANAX Linnaeus

PANAX GINSENG C. A. Mey. in Bull. Phys.-Math. Acad. Pétersb. 1 (1843) 340.

Radix sinica Rumph. Herb. Amb. 7: 42, t. 21, f. 1.

There is little doubt that the plant discussed by Rumphius is the common Chinese ginseng, but the figure given by Rumphius, other than that of the root, appears to be largely imaginary. Henschel referred it to Sium ninsi Linn., a species the status of which is not understood; it may prove to be the oldest name for Panax ginseng. Hasskarl, Neue Schlüssel (1866) 190, placed it under Sium siarum Linn. var. ninsi DC.; both this reduction and the one suggested above are open to serious objections, although the matter of the exact identity of the plant Rumphius discussed is of slight importance, as no question of nomenclature is involved.

UMBELLIFERAE

CENTELLA Linnaeus

CENTELLA ASIATICA (Linn.) Urban in Mart. Fl. Bras. 111: 287.

Hydrocotyle asiatica Linn. Sp. Pl. (1753) 234.

Pes equinus Rumph. Herb. Amb. 5: 455, t. 169, f. 1.

Amboina, Soja road, Robinson Pl. Rumph. Amb. 326, August 1, 1913, common up to an altitude of 300 meters.

The reduction of *Pes equinus* to *Hydrocotyle asiatica* was first made by Linnaeus, in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 133, Syst. ed. 10 (1759) 953, Sp. Pl. ed. 2 (1762) 338, which has been followed by many succeeding authors. Loureiro, Fl. Cochinch. (1790) 176, cites the Rumphian figure as representing the new genus and species *Trisanthus cochinchinensis* Lour., which is a synonym of *Centella asiatica* (Linn.) Urban.

ANTHERISCUS Bernhardi

ANTHERISCUS sp.?

Levisticum indicum Rumph. Herb. Amb. 5: 269, t. 93, f. 3.

Nothing resembling this is represented in our Amboina collections, and Levisticum indicum Rumph, has never been satisfactorily reduced. Loureiro, Fl. Cochinch. (1790) 179, places it under Bubon macedonicus Linn.=Athamantha macedonica Spreng., while Henschel thought it might be Ligusticum striatum Roxb.=Selinum striatum Benth. & Hook. f.; the range of this, Himalayan, makes the suggested reduction of Rumphius's Levisticum indicum an impossible one. Hasskarl, Neue Schlüssel (1866) 119, mentions the resemblance of the figure to Apium involucratum Roxb, and Cnidium diffusum DC. Field work and a critical study of the various species of Umbelliferae cultivated in the Malay Archipelago should solve the problem of the status of Levisticum indicum, as Rumphius states that the plant was cultivated only, and that it was rare in Amboina, but more abundant in Java and Ternate. It may prove to be Antheriscus cereifolium Hoffm., which Koorders reports from Java, but should be critically compared with Ligusticum acutilobum Sieb. & Zucc.

CARUM Ruppius

CARUM COPTICUM (Linn.) Benth. ex C. B. Clarke in Hook. f. Fl. Brit. Ind. 2 (1879) 682.

Ammi copticum Linn. Mant. 1 (1767) 56.

Ligusticum ajowan Roxb. Hort. Beng. (1814) 21, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 91.

Ptychotis ajowan DC. Prodr. 4 (1830) 109. Carum Rumph. Herb. Amb. 5: 270. Amudium Rumph. Herb. Amb. 5: 270.

The form described by Rumphius under the name Carum is unquestionably Ptychotis ajowan DC.=Carum copticum Benth., for which Rumphius cites the native names aydjuan and djintam soa. Henschel thought that it might be de Candolle's species. Amudium was thought by Henschel to be Ptychotis roxburghiana DC.=Carum roxburghianum Benth. It is certainly identical with the Philippine form described by Blanco as Ammi glaucifolium (non Linn.) Blanco Fl. Filip. (1837) 213=Daucus anisodorus Blanco op. cit. ed. 2 (1845) 150, for which he cites the native name lamudio. Rumphius took his data regarding Amudium from Nieremberg's description of the Philippine plant.

Of uncertain status, other than that it is an umbelliferous plant, is Mussi Rumph. Herb. Amb. 5: 271. It may be *Carum carvi* Linn., but the description is too indefinite to be at all certain. *Mussi* is given by Rumphius as the Javanese name.

CRITHMUM Linnaeus

CRITHMUM MARITIMUM Linn. Sp. Pl. (1753) 246.

Crithamus verus Rumph. Herb. Amb. 6: 166, t. 72, f. 2.

The plant discussed is the European Crithmum maritimum Linn., and it was apparently figured from European specimens.

MYRSINACEAE

MAESA Forskål

MAESA TETRANDRA (Roxb.) A. DC. Prodr. 8 (1844) 82.

Baeobotrys tetrandra Roxb. Fl. Ind. 2 (1824) 233.

Maesa amboinensis Scheff. Comm. Myrsin. Archip. Ind. (1867) 29. Perlarius II Rumph. Herb. Amb. 4: 122, t. 57.

Amboina, Mahija, Koesoekoesoe sereh, Amahoesoe, and town of Amboina, Robinson Pl. Rumph. Amb. 241, 242, 234, July to October, 1913, in thickets and light forests, sea level to an altitude of 300 meters, locally known as kayo mani mani.

Perlarius II Rumph. was reduced by Loureiro, Fl. Cochinch. (1790) 124, fo Dartus perlarius Lour., the specific name being taken from Rumphius. The plant actually described was from Cochin-China and manifestly is not the same as the Amboina one figured and described by Rumphius. In this erroneous reduction Loureiro has been followed by Poiret, Roemer and

Schultes, Henschel, Kosteletzky, Don, Endlicher, Walpers, Pritzel, A. de Candolle, and Miquel. Rumphius's figure, while crude, is a fair representation of *Maesa tetrandra* A. DC., the type of which was from the Moluccas, probably Amboina, while the description applies perfectly. I consider the correctness of this reduction absolutely certain.

The form described in the same chapter as Perlarius III silvestris is one of uncertain status. It may be an allied species of *Maesa* or may refer to a species of some other genus or even of some other family; Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 84, thought that it might be a *Callicarpa*.

AEGICERAS Gaertner

AEGICERAS CORNICULATUM (Linn.) Blanco Fl. Filip. (1837) 79.

Rhizophora corniculata Linn. in Stickman Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 123 (type!).

Rhizophora aegiceras Gmel. Syst. (1791) 747.

Aegiceras majus Gaertn. Fruct. 1 (1788) 216, t. 46.

Aegiceras minus Gaertn. Fruct. 1 (1788) 216 p. p., quoad syn. Rumph. Umbraculum corniculatum O. Kuntze Rev. Gen. Pl. 1 (1891) 405.

Mangium fruticans I corniculatum Rumph. Herb. Amb. 3: 117, t. 77. Umbraculum maris ceramense Rumph. Herb. Amb. 3: 124, t. 82.

Umbraculum maris amboinense Rumph. Herb. Amb. 3: 124.

Amboina, Ayer putri, Robinson Pl. Rumph. Amb. 254, July 28, 1913, along tidal streams, locally known as brappat.

Mangium fruticans I corniculatum Rumph, is the whole basis of Rhizophora corniculata Linn.=Aegiceras corniculatum (Linn.) Blanco, as cited in Stickman, Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 123, Syst. ed. 10 (1759) 1043, Sp. Pl. ed. 2 (1762) 635. It has also been cited by various authors under Aegiceras majus Gaertn. and under Aegiceras fragrans Koenig, both synonyms of Aegiceras corniculatum (Linn.) Blanco. Umbraculum maris ceramense Rumph. is manifestly the same as Mangium fruticans I corniculatum Rumph, and was reduced by Gaertner, Fruct. 1 (1788) 216, to Aegiceras minus Gaertn. in the original description of that species. Aegiceras minus Gaertn. is, however, to be typified by the species figured by him, a Ceylon plant, which is Rourea santaloides (Vahl) W. & A.=Rourea minor (Gaertn.). Willdenow, Persoon, Poiret. Roemer and Schultes, Sprengel, Henschel, Spanoghe, de Candolle, Pritzel, and Miquel have followed Gaertner in this reduction, but Aegiceras minus Gaertn., in part, only as to the Rumphian synonym, is Aegiceras corniculatum (Linn.) Blanco. Umbraculum maris amboinensis Rumph, is placed here after Mez in Engl.

Pflanzenreich 9 (1902) 56, but may well be the same as Aegiceras floridum Roem. & Schultes.

AEGICERAS FLORIDUM Roem. & Schultes Syst. 4 (1819) 512 (type!).

Aegiceras ferreum Blume Bijdr. (1826) 693.

Aegiceras nigricans A. Rich. Voy. Astrolabe 2 (1834) 57, t. 21.

Mangium floridum Rumph. Herb. Amb. 3: 125, t. 83.

Mangium ferreum mas Rumph. Herb. Amb. 3: 120 p. p., quoad t. 79, f. A, B.

Mangium fruticans II parvifolium Rumph. Herb. Amb. 3: 117.

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 253, October 31, 1913, along the seashore.

Mangium floridum Rumph. is the whole basis of Aegiceras floridum Roem. & Schultes, a species very different from Aegiceras corniculatum (Linn.) Blanco. The flowering and fruiting branchlets figured on t. 79, f. A, B, under Mangium ferreum Rumph. are also manifestly referable to Aegiceras floridum R. & S., although Mangium ferreum Rumph. is for the most part Pemphis acidula Forst. (see p. 382). Mangium fruticans II parvifolium Rumph. is also apparently referable to this species, judging from the description; while Umbraculum maris amboinense Rumph., Herb. Amb. 3: 124, may be referable to Aegiceras floridum R. & S., rather than to Aegiceras corniculatum (Linn.) Blanco where I have placed it.

PLUMBAGINACEAE

PLUMBAGO Linnaeus

PLUMBAGO INDICA Linn. in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 133 (type!).

Plumbago rosea Linn. Sp. Pl. ed. 2 (1762) 215.

Plumbago coccinea Salisb. Prodr. (1796) 122.

Radix vesicatoria Rumph. Herb. Amb. 5: 453, t. 168.

AMBOINA, Way tommo, Robinson Pl. Rumph. Amb. 221, August 16, 1913.

Plumbago indica Linn., validly published by citation of Rumphius, is not included in Index Kewensis, and this specific name has been entirely overlooked by all botanists. Linnaeus, Systema, ed. 10 (1759) 921, abandoned the name Plumbago indica and erroneously referred Radix vesicatoria to Plumbago zeylanica Linn. In the Species Plantarum, ed. 2 (1762) 215, he referred it correctly to Plumbago rosea Linn., but this now becomes a synonym of the older name, Plumbago indica Linn. The description is unmistakably that of the plant commonly known as Plumbago rosea Linn. and as P. coccinea Salisb.; the figure is not particularly good, although manifestly a Plumbago.

SAPOTACEAE

PAYENA A. de Candolle

PAYENA LEERII (Teysm. & Binn.) Kurz in Journ. As. Soc. Beng. 40² (1871) 69.

Azaola leerii Teysm. & Binn. in Nat. Tijdschr. Nederl. Ind. 6 (1854) 116.

Hapaloceras ? arupa Hassk. in Abhandl. Naturf. Gesellsch. Halle 9 (1866) 193 (Neue Schlüssel 51) (type!).

Arupa Rumph. Herb. Amb. 3: 66, t. 38.

Under Arupa Rumphius briefly describes two forms which he indicates as Arupa alba and Arupa rubra. He distinctly states that the flowers and fruits were unknown to him, yet figures a plant with fruits, probably the one mentioned in the postscript following the original description. Arupa alba Rumph. is the whole basis of Hapaloceras arupa Hassk., a name not listed in Index Kewensis. The illustration, and for that matter the description, applies fairly well to Payena leerii Kurz, a species already reported from Amboina by Burck in Ann. Jard. Bot. Buitenz. 5 (1885) 56. This may, however, prove not to be the correct disposition of Arupa, but this matter can be definitely determined only after a more comprehensive exploration of Amboina. The form very imperfectly described as Arupa rubra probably pertains to some entirely different plant, but its status is wholly problematical and cannot be determined from the description. The figure might pass for Cratoxylon formosum Dyer, but the indicated size of the leaves and the fruit characters, as given in the description, make this identification an impossible one.

PALAQUIUM Blanco

PALAQUIUM AMBOINENSE Burck in Ann. Jard. Bot. Buitenz. 5 (1885) 37. Cicadaria latifolia Rumph. Herb. Amb. 3: 210, t. 135?

The figure conforms fairly well with specimens of Burck's species taken from trees cultivated in the botanic garden at Buitenzorg, Java. The correctness of the reduction, however, is very doubtful. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 68, referred it to the *Sapotaceae*, where it certainly belongs.

The forms described in this chapter as Cicadaria angustifolia and as C. zeylanica are undeterminable, and probably neither belongs in this family.

PALAQUIUM sp.?

Sicchius I mas Rumph. Herb. Amb. 3: 40, t. 21?

Sicchius I mas is of very doubtful status, and the description

is possibly a mixture of the characters of two different species. Hasskarl, Neue Schlüssel (1866) 48, quotes it under Hapaloceras leerii Hassk.=Keratophorus leerii Hassk.=Payena leerii Kurz, where it certainly does not belong; at least the form figured by Rumphius. He also suggests that it is an Aegiceras, an equally wrong disposition of it. Teysmann, quoted by Hasskarl, considered that it belonged to the Sapotaceae. The description and the plate indicate Sapotaceae, but no species is known to me that conforms with the characters indicated by Rumphius. The drawing of the fruit certainly represents no sapotaceous plant, and it does not conform with Rumphius's description. The name sicki in Amboina appears to be applicable to Litsea, but the plant figured and described is no lauraceous species.

SIDEROXYLON Linnaeus

SIDEROXYLON MICROCARPUM Burck in Ann. Jard. Bot. Buitenz. 5 (1885) 17.

Arbor facum major Rumph. Herb. Amb. 3: 77, t. 49.

Rumphius's figure is an excellent one and unmistakably represents a Sideroxylon, and I believe S. microcarpum Burck in spite of the discrepancies between the fruit as figured by Rumphius and as described by Burck. The type of Sideroxylon microcarpum Burck was from Amboina, with the native names ay-lapei and kajoe lapei-lapei; two names cited by Rumphius are caju lobe and caju lape-lape. The figure agrees very closely with flowering specimens from trees cultivated in the botanic garden at Buitenzorg. Lamarck, Encycl. 3 (1789) 234, cites it with doubt under Bassia longifolia Lam., where it manifestly does not belong. The only other suggested indentification of it is Teysmann's reference of it to the Sapotaceae, as quoted by Hasskarl.

SIDEROXYLON sp.

Sicchius II femina Rumph. Herb. Amb. 3: 41, t. 22?

The figure certainly represents a sapotaceous plant and is probably a species of *Sideroxylon* as placed by Teysmann in Hassk. Neue Schlüssel (1866) 49. It has, however, much the appearance of *Payena leerii* Kurz, which is known from Amboina. The brief description given by Rumphius does not agree with the figure as to fruit characters. It is certainly no *Elaeocarpus* as suggested by Hasskarl. The form briefly described as Sicchius III in this chapter is entirely undeterminable.

SIDEROXYLON sp.

Lignum eurinum Rumph. Herb. Amb. 3: 63, t. 35.

There is no previous reduction of Lignum eurinum Rumph. except Hasskarl's tentative suggestion that it might be Melanthesia or Maesa. The presence of milky sap, mentioned by Rumphius in the description, invalidates these suggested reductions. The plant is undoubtedly a species of Sideroxylon; it closely matches specimens from plants cultivated in the botanic garden at Buitenzorg distributed as Sideroxylon attenuatum A. DC., var. amboinense Scheff. If these are correctly named, they are certainly specifically distinct from Sideroxylon attenuatum A. DC.

MIMUSOPS Linnaeus

MIMUSOPS ELENGI Linn. Sp. Pl. (1753) 349.

Flos cuspidum Rumph. Herb. Amb. 2: 189, t. 63.

This common and well-known species is not represented in our Amboina collections. Rumphius states that it was an introduced plant in Amboina, as it is in most parts of the Malayan region. The reduction was first made by Linnaeus, in Stickman Herb. Amb. (1754) 10, Amoen. Acad. 4 (1759) 121, Syst. ed. 10 (1759) 1000, Sp. Pl. ed. 2 (1762) 497, which is manifestly the correct disposition of *Flos cuspidum* and has been accepted by all authors.

MIMUSOPS PARVIFOLIA R. Br. Prodr. (1810) 531.

Tanjonus litorea Rumph. Herb. Amb. 2: 193, t. 64.

Not represented in our Amboina collections. The species is manifestly a *Mimusops*, and I cannot distinguish it from a large series of specimens from the coastal regions in the Philippines, others from Celebes, and others from New Caledonia that I believe represent *Mimusops parvifolia* R. Br. Hasskarl, Neue Schlüssel (1866) 39, states "ob calycem quadripartitum insignis arbor et Mimusopi aliena;" while Teysmann, quoted by Hasskarl, l. c., referred it to *Uvaria tripetala* Roxb. Burman f., Fl. Ind. (1768) 86, reduced it to *Mimusops elengi* Linn. The whole description, except the 4-parted calyx, native names, etc., is *Mimusops*, and the figure is an excellent representation of *Mimusops*, with some of the calyces indicated as 5-parted, while Rumphius definitely states that the flowers and fruits are very similar to those of the domesticated *tanjonus*, that is, the form considered by him in the preceding chapter, *Mimusops elengi* Linn.

MIMUSOPS KAUKI Linn. Sp. Pl. (1753) 349.

Metrosideros macassarensis Rumph. Herb. Amb. 3: 19, t. 8.

This reduction was originally made by Linnaeus, in Stickman Herb. Amb. (1754) 11, Amoen. Acad. 4 (1759) 122, Syst. ed. 10 (1759) 1000, Sp. Pl. ed. 2 (1763) 497, which has been accepted by most authors and is probably the correct disposition of the Rumphian species. Rumphius's material was from Celebes, not from Amboina. Lamarck, Encycl. 4 (1797) 186, referred it to Mimusops obtusifolia Lam., but this species was based on actual specimens, and it may or may not prove to be the same as Mimusops kauki Linn. Hasskarl, Neue Schlüssel (1866) 47, considered that the flowers represented by t. 8 were referable to Mimusops manilkara Don, but this species is supposed to be a synonym of Mimusops kauki Linn.

SAPOTACEAE indet.

Vidoricum silvestre II Rumph. Herb. Amb. 3: 184.

Gaertner, Fruct. 2 (1794) 104, mentions this in the original description of *Bassia dubia* Gaertn. as possibly representing that species. *Bassia dubia* Gaertn. is an entirely doubtful species of which the flowers and leaves are unknown. Its country of origin is also unknown, except that it probably came from the Indo-Malayan region.

SAPOTACEAE indet.

Vidoricum silvestre IV Rumph. Herb. Amb. 3: 185, t. 118.

The form figured is possibly a species of *Sideroxylon*, but the figure does not conform especially well with the description of *Vidoricum silvestre IV*, which it is supposed to represent. It may be the form of *Vidoricum* that Gaertner intended to cite under *Bassia dubia* Gaertn., but he does not mention the figure. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 65, thought that it might be a *Diospyros*. This is possibly the correct disposition of the description, but is manifestly not the correct disposition of the figure.

The other forms described under *Vidoricum* are all indeterminable from data at present available. They are as follows:

Vidoricum silvestre II var. Rumph. Herb. Amb. 3: 184.

Vidoricum III Rumph. Herb. Amb. 3: 185.

Vidoricum V Rumph. Herb. Amb. 3: 185.

Vidoricum VI Rumph. Herb. Amb. 3: 186.

SAPOTACEAE indet.

Lignum clavorum Rumph. Herb. Amb. 3: 97, t. 64.

This was placed by Henschel, with doubt, under Calophyllum

spurium Choisy, in Vita Rumph. (1833) 156, following Rumphius's comparison of it with *Tsjerou-Ponna* of Rheede, Hort. Malabar. 4: 81. Its status is indeterminable from the data at present available, although it undoubtedly belongs in the *Sapotaceae*. This was Teysmann's disposition of it, as quoted by Hasskarl, Neue Schlüssel (1866) 55.

EBENACEAE

MABA Forster

MABA BUXIFOLIA (Rottb.) Pers. Syn. 2 (1807) 606?

Pisonia? buxifolia Rottb. in Nye Saml. Kong. Danske Skrift. 2 (1783) 536, t. 4, f. 2.

Maba ebenus Spreng. Syst. 2 (1825) 126 (type!).

Ebenus Rumph. Herb. Amb. 3: 1, t. 1.

Nothing resembling this is represented in our Amboina collections. Loureiro, Fl. Cochinch. (1790) 613, discusses it under his *Ebenoxylum verum*, which manifestly is a species of *Maba*, but certainly not *Maba elliptica* Forst. where it was placed by Hiern, Trans. Cambr. Philos. Soc. 12 (1873) 122. Loureiro's species must be interpreted from his original specimens or, failing these, from Cochin-China material. It is apparently a form of *Maba buxifolia* Pers. or a closely allied species. *Maba ebenus* Spreng. is based wholly on Rumphius and must be interpreted from the Rumphian figure and description. From Rumphius's description of the flower as 3-merous the species is a *Maba*, not a *Diospyros*.

Ebenus e Madagascar Rumph. Herb. Amb. 3: 6 is indeterminable; Hasskarl, Neue Schlüssel (1866) 46, suggested that it might be Maba madagascariensis A. DC.

DIOSPYROS Linnaeus

DIOSPYROS MARITIMA Blume Bijdr. (1825) 669.

Ebenus molucca Rumph. Herb. Amb. 3: 6, t. 2.

Nothing resembling this species is presented by our Amboina collections. *Ebenus molucca* Rumph. is certainly a species of *Diospyros*, and it is either *D. maritima* Blume or a very closely allied form. Miquel, Fl. Ind. Bat. 2 (1859) 1049, suggested that the Rumphian plant pertained to *Diospyros*, but no further determination of it has been suggested by other authors.

DIOSPYROS EBENUM Koen. in Physiogr. Salsk. Handl. 1 (1776) 176? Hebenaster Rumph. Herb. Amb. 3: 13, t. 6.

Nothing resembling this species occurs in our Amboina collections. *Hebenaster* has been referred to *Diospyros ebenaster*

Retz. by various authors, but this does not seem to be the proper disposition of it. I agree with Scott * that it conforms much better with Diospyros ebenum Koen. than with D. ebenaster Retz. The exact identity of Hebenaster cannot be determined until actual Moluccan specimens are available for comparison. Loureiro, Fl. Cochinch. (1790) 227, erroneously refers it to his Diospyros decandra; but Miquel, Fl. Ind. Bat. 2 (1859) 1047, definitely reduces it to Diospyros ebenum Koen., and Roxburgh, Fl. Ind. ed. 2, 2 (1832) 529 expresses the same opinion. Still another species is probably represented by Hebenaster amalyensis Rumph. Herb. Amb. 3: 15, casually discussed under Hebenaster. Native names given by Rumphius are: Amboina, lolin, lorin, secur; Banda, boa djarong; Uliassar and Ceram, ahuelli.

DIOSPYROS KAKI Linn. f. Suppl. (1781) 439.

Anona sariffa Roxb. ex Henschel Vita Rumph. (1833) 142 (type!). Khi Rumph. Herb. Amb. 1: 137.

Rumphius describes one of the Chinese persimmons, which Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 19, refers to Diospyros kaki Linn., this doubtless being the correct disposition of it. Anona sariffa Roxb., as published by Henschel, does not otherwise appear in botanical literature; it is typified by the Rumphian description and hence becomes a synonym of Diospyros kaki Linn. The name is not listed in Index Kewensis.

DIOSPYROS sp.?

Ebenus alba Rumph. Herb. Amb. 3: 8, t. 3.

This may ultimately prove to be no *Diospyros*. The description is fair, but the figure of the infructescence does not look like any *Diospyros* known to me. The reduction follows Teysmann's opinion as quoted by Hasskarl, Neue Schlüssel (1866) 46.

SYMPLOCACEAE

SYMPLOCOS Jacquin

SYMPLOCOS JAVANICA (Blume) Kurz in Journ. As. Soc. Beng. 40² (1871) 64.

Dicalyx javanicus Blume Bijdr. (1826) 1117.

Dicalyx salaccensis Blume 1. c. 1118.

Symplocos ferruginea Roxb. Hort. Beng. (1814) 40, nomen nudum; Fl. Ind. ed. 2, 2 (1832) 542.

Arbor aluminosa Rumph. Herb. Amb. 3: 160, t. 100.

Symplocos javanica Kurz (S. ferruginea Roxb.) is not repres-

^{*} Kew Bull. (1915) 65-67.

ented in our Amboina collection, but the species has been reported from Amboina, two collections, by Brand. It is barely possible, however, that the Amboina specimens I have referred to Symplocos syringoides Brand * represent Arbor aluminosa; one of these specimens bears the native name kayu reha, the second and really essential part of this name manifestly corresponding to leha cited by Rumphius as the Amboinese name of Arbor aluminosa. In size this shrub also agrees with Rumphius's description, but the leaves are but very slightly toothed, while Rumphius's figure presents leaves prominently toothed. Loureiro, Fl. Cochinch. (1790) 315, refers Arbor aluminosa to his Decadia aluminosa, but Decadia aluminosa was actually described from Cochin-China specimens. Loureiro's generic description is faulty, as shown by S. LeM. Moore in Journ. Bot. 42 (1914) 148, who has critically examined Loureiro's type specimen in the herbarium of the British Museum. His conclusion is as follows:

On the whole, I think it likely that D[icalyx] aluminosa may be S[ymplocos] syringoides, as such it has been written up provisionally in the National Herbarium.

However, Symplocos syringoides Brand is a species known only from Amboina, and as species go in Symplocos it seems rather improbable that the Cochin-China specimen actually described by Loureiro is identical with the Amboina plant. Dicalyx aluminosus Blume, Bijdr. (1826) 1117, was based essentially on specimens from Java and Nusa Kambangan and is Symplocos aluminosa (Blume) Brand. Both Loureiro's and Blume's specific names were from Rumphius, but the plants actually described are not Arbor aluminosa Rumph. If the synonymy given by Brand, Engl. Pflanzenreich 6 (1901) 40, is correct, the earliest valid specific name is Symplocos javanica (Blume) Kurz, for Symplocos ferruginea Roxb., 1814, is merely a nomen nudum.

Hasskarl, Neue Schlüssel (1866) 186, has suggested that Parens muscarum Rumph. Herb. Amb. 7: 16, t. 9, f. 2, may be a Symplocos. There is nothing in the description that would indicate this, while the figure presents a seedling or sapling shrub with galls on the leaves. The status of $Parens\ muscarum\ Rumph$. is quite undeterminable. The native name cited by Rumphius is $ay\ lala$.

^{*} Philip. Journ. Sci. 11 (1916) Bot. 304.

OLEACEAE

JASMINUM Linnaeus

JASMINUM SAMBAC (Linn.) Ait. Hort. Kew. 1 (1789) 8.

Nyctanthes sambac Linn. Sp. Pl. (1753) 6.

Flos manorae Rumph. Herb. Amb. 5: 52, t. 30.

AMBOINA, Binting, Robinson Pl. Rumph. Amb. 258, August 13, 1913, on limestone formation at an altitude of about 2 meters.

The reduction to *Nyctanthes sambac* was made by Linnaeus in the year following the publication of that species, Stickman Herb. Amb. (1754) 19, and appears in Linnaeus's later publications; but in the more modern literature it is placed under *Jasminum sambac* (Linn.) Ait., this being certainly its proper disposition. Here should be referred not only *Flos manorae* Rumph., but also Flos manorae plenus Rumph. l. c. 52, t. 30 A; the latter being the commonly cultivated form of *Jasminum sambac* with double flowers.

JASMINUM sp.

Jasminum litoreum Rumph. Herb. Amb. 5: 54 (non 2: 86, t. 46).

The species described is undoubtedly a true Jasminum, and from the description and habitat given by Rumphius I make the suggestion that the plant may prove to be the same as the widely distributed Malayan species, J. bifarium Wall. This species, however, does not appear in our Amboina collections. Hasskarl, Neue Schlüssel (1866) 94, made the suggestion that it might be a Jasminum, but he was not sure as to the genus and suggested no species. The reference is unimportant, and no other author has even suggested a possible identification for the plant described by Rumphius. Jasminum litoreum Rumph. Herb. Amb. 2: 84, t. 46, is Clerodendron commersonii (Lam.) Spreng.

MYXOPYRUM Blume

MYXOPYRUM MACROLOBUM A. W. Hill in Kew Bull. (1910) 42.

Sirioides alter Rumph. Herb. Amb. 5: 50, t. 29, f. 1?

Amboina, Paso, Robinson Pl. Rumph. Amb. 518, October 29, 1913, on trees along the beach. A fruiting specimen.

Sirioides alter, as figured by Rumphius, was reduced by Kosteletzky, Allg. Med.-Pharm. Fl. 3 (1834) 1074, to Strychnos bicirrhosa Lesch., but is certainly not the species described by Leschenault in Roxb. Fl. Ind. 2 (1824) 267=S. colubrina Linn. There are serious objections to the reduction of Sirioides alter to Myxopyrum, but it is certainly Myxopyrum in part. The figure shows a plant with tendrils, which is no Myxopyrum but

a Strychnos character. Sirioides, as described by Rumphius on page 49 and in the same chapter with Sirioides alter, is certainly a Strychnos. It is possible that the drawing is due to the combination of Strychnos and Myxopyrum characters from two different plants. I am under obligations to Mr. A. W. Hill of the Royal Gardens, Kew, England, for the determination of No. 518 with Myxopyrum macrolobum A. W. Hill. Regarding it he writes: "The Myxopyrum is almost certainly M. macrolobum A. W. Hill, but our specimens have no fruit and yours have no flowers."

LOGANIACEAE

STRYCHNOS Linnaeus

STRYCHNOS MURICATA Kostel. Allg. Med.-Pharm. Fl. 3 (1834) 1072 (type!).

Strychnos ligustrina Blume Rumphia 1 (1836) 68, t. 25. Lignum colubrinum timorense Rumph. Herb. Amb. 2: 121, t. 38.

The plant that Rumphius figured and described under the name Lignum colubrinum timorense was not from Amboina, but from Timor. Willdenow, Sp. Pl. 1² (1797) 1052, erroneously reduced it to Strychnos colubrina Linn., in which he was followed by several authors. It is the whole basis of Strychnos muricata Kostel., which, in publication, antedates Strychnos ligustrina Blume; the two species are certainly identical. In spite of the fact that some of the fruits were drawn by Rumphius's artist as somewhat muricate, there is no doubt whatever as to the identity of his plant with Strychnos ligustrina Blume=S. muricata Kostel. Some authors have erroneously cited t. 37 as representing Lignum colubrinum timorense, but this figure represents Vidara litorea Rumph.=Ximenia americana Linn.

The form very briefly described by Rumphius as Upas alterum, Herb. Amb. 2: 264, under *Arbor toxicaria=Antiaria toxicaria* Lesch., is considered by Blume and by Hasskarl to be the same as *Strychnos tieute* Lesch., which may be the correct disposition of it.

STRYCHNOS BARBATA A. W. Hill in Kew Bull. (1909) 359.

Sirioides Rumph. Herb. Amb. 5: 49?

AMBOINA, Amahoesoe, Robinson Pl. Rumph. Amb. 611, September 18, 1913, on cliffs, altitude about 6 meters; Liang, Robinson Pl. Rumph. Amb. 612, November 29, 1913, in light forests, altitude about 15 meters.

From Rumphius's description Sirioides is certainly a species of Strychnos, in all probability the form represented by the

specimens here assigned to it. Sirioides has not previously been definitely placed, Hasskarl, Neue Schlüssel (1866) 94, merely indicating that it pertains to the Piperaceae, manifestly an entirely erroneous identification. Sirioides alter, described by Rumphius in the same chapter and figured, $t.\ 29$, $f.\ 1$, seems to be Myxopyrum, although the drawing may be a combination of Myxopyrum and Strychnos characters (see p. 422, under Myxopyrum). I am under obligations to Mr. A. W. Hill, of the Royal Gardens, Kew, for the identification of the above specimens with $Strychnos\ barbata\ A$. W. Hill. The species was previously known only from New Guinea. Mr. Hill writes that the specific determination of $No.\ 612$ is not certain, as it is in fruit, while the venation of the leaves is not quite the same as in the other number cited here, which is in flower.

FAGRAEA Thunberg

FAGRAEA AMBOINENSIS Blume Mus. Bot. 1 (1850) 166.

Fagraea littoralis Blume var. amboinensis Blume Rumphia 2 (1836) 28. Funis toaccae Rumph. Herb. Amb. 5: 481, t. 179.

AMBOINA, Mahiya and Way tommo, Robinson Pl. Rumph. Amb. 519, August, 1913, on limestone rocks and on trees, altitude 25 to 300 meters; Hitoe lama, Pl. Rumph. Amb. 244, November, 1913, along roadsides in light forests, altitude about 50 meters, locally known as tonki utan.

Funis toaccae Rumph. is well figured, but rather poorly described, perhaps erroneously described as to the seeds, the seed characters assigned perhaps pertaining to some apocynaceous plant. The description otherwise and the figure conform very closely to the plants here identified as Fagraea amboinensis Blume. Blume himself discusses Funis toaccae Rumph. in the original description of Fagraea littoralis Blume var. amboinensis Blume. As to the status of Fagraea amboinensis Blume as a species distinct from other described and allied forms of the same genus, I can express no opinion, other than that I do not consider it the same as the Javan Fagraea littoralis Blume.

GENTIANACEAE

LIMNANTHEMUM Linnaeus

LIMNANTHEMUM INDICUM (Linn.) Griseb. Gen. Sp. Gent. (1839) 343.

Menyanthes indica Linn. Sp. Pl. (1753) 145.

Nymphaea indica minor II ceramica Rumph. Herb. Amb. 6: 173, t. 72, f. 3.

The Rumphian species was originally reduced to Menyanthes indica Linn., by Linnaeus in Stickman Herb. Amb. (1754) 28,

Amoen. Acad. 4 (1759) 136, and has been cited by various authors under this name, under Villarsia indica Vent., a synonym, and under Limnanthemum indicum Griseb. It is to be noted that in the description of the plate in Rumphius the figure is listed as representing Nymphaea indica minor I, but the description of this is Nymphaea; the description of Nymphaea indica minor II ceramica is unmistakably Limnanthemum and of the plant figured.

APOCYNACEAE

NEUBURGIA Blume

NEUBURGIA MUSCULIFORMIS (Lam.) Miq. Fl. Ind. Bat. 2 (1857) 403.

Cerbera musculiformis Lam. Encycl. 1 (1783) 62 (type!). Banksia musculiformis Gaertn. Fruct. 1 (1788) 221 (type!). Neuburgia tuberculata Blume Mus. Bot. 1 (1850) 157. Fructus musculiformis Rumph. Herb. Amb. 2: 184, t. 60.

This species is not represented in our Amboina collections; Rumphius's material was from Ceram. Fructus musculiformis Rumph. is the whole basis of Cerbera musculiformis Lam. and of Banksia musculiformis Gaertn., and hence of Neuburgia musculiformis Miq. and of N. tuberculata Blume. It is not at all clear that Neuburgia tubiflora Blume, of New Guinea, is specifically distinct, and Miquel reduces it as a synonym of N. musculiformis (Lam.) Miq.

CARISSA * Linnaeus

CARISSA CARANDAS Linn. Mant. 1 (1767) 52.

Mespilus silvestris Burm. Index Univ. Herb. Amb. (1755) [14] (type!) non [18]?

Carissa spinarum Linn. Mant. 2 (1771) 559, saltem quoad syn. Rumph. Echites spinosa Burm. f. Fl. Ind. (1768) 69.

Capparis carandas Burm. f. Fl. Ind. (1768) 118, 119, saltem quoad syn. Rumph.

Oxyacantha javana Rumph. Herb. Amb. 7: 39, t. 19, f. 3? Carandas Rumph. Herb. Amb. 7: 57, t. 25.

Carandas Rumph. is cited in the original descriptions of all of the species listed above, except Carissa spinarum Linn. and Mespilus silvestris Burm., and is undoubtedly referable to typical Carissa carandas Linn. It has been almost universally cited under the Linnean name. Oxyacantha javana Rumph. is of doubtful status, but is possibly the same as Carissa carandas Linn. It was placed by Linnaeus under Carissa spinarum Linn. in the original description of that species, but Linnaeus mani-

^{*} Retained name, Vienna Code; Arduina Mill. (1760) and Carandas Adans. (1763) are older.

festly had specimens before him when writing the description. Loureiro, Fl. Cochinch. (1790) 318, places it under *Phoberos chinensis* Lour.; Endlicher placed it under *Damnacanthus*; and Dietrich placed it under *Canthium indicum* Dietr.—*Damnacanthus indicus* Gaertn. It is the whole basis of *Mespilus silvestris* Burm. as published on page 14 of his "Index Universalis," but *Mespilus silvestris* Burm. as published on page 18 of the same work is entirely different and is *Flacourtia indica* (Burm. f.) Merr. Blume reduced *Oxyacantha javana* Rumph, to *Carissa carandas* Linn., but there are certain objections to this reduction in Rumphius's description. I cannot, however, suggest any more likely reduction of it. If correctly placed, Burman's specific name is the oldest valid one, but no change is here made owing to the uncertain status of *Oxyacantha javana* Rumph. Spina pectinata Rumph., Herb. Amb. 7: 39, probably also belongs here.

CHILOCARPUS Blume

CHILOCARPUS SD.

Funis pulassarius Rumph. Herb. Amb. 5: 34, t. 21.

Amboina, Gelala, Robinson Pl. Rumph. Amb. 484, September 19, 1913, along small streams, altitude about 120 meters.

Rumphius's figure is unmistakably that of a species of *Chilocarpus*; so far as I can determine from the material available for study, it has remained undescribed in modern botanical literature. The Amboina specimen I have referred here presents only immature flowers, and as the Rumphian figure presents no inflorescences, but only a branch with leaves and fruits, I consider it advisable for the present merely to refer *Funis pulassarius* Rumph. to the genus only. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 92, considered that *Funis pulassarius* Rumph. represented a species of *Chilocarpus*.

LEPINIOPSIS Valeton

LEPINIOPSIS TERNATENSIS Valet. in Ann. Jard. Bot. Buitenz. 12 (1895) 352, t. 28.

Pulassarius arbor Rumph. Herb. Amb. 3: 90, t. 60.

Amboina, Hitoe lama, Robinson Pl. Rumph. Amb. 73, October 8, 1913, in forests, altitude about 200 meters.

The genus *Lepiniopsis* Valeton, a very characteristic one, was originally described from specimens cultivated in the botanic garden at Buitenzorg, Java, originating in Ternate Island. Later, what I took to be the same species was collected in Mindanao and has now been found to be rather widely distributed in the southern and central Philippines; this has still more

recently been described by Elmer as Lepiniopsis philippinensis Elm. Pulassarius Rumph. is manifestly identical with Lepiniopsis ternatensis Valet.; the Rumphian plant, up to the present time, has not been reduced to any modern genus or species.

PLUMIERA (Plumeria) Linnaeus

PLUMIERA ACUMINATA Ait. Hort. Kew. ed. 2, 2 (1811) 70.

Plumiera acutifolia Poir. in Lam. Encycl. Suppl. 2 (1812) 667 (type). Flos convolutus Rumph. Herb. Amb. 4: 85, t. 38.

AMBOINA, Robinson Pl. Rumph. Amb. 78, October 27, 1913, on hills behind the town of Amboina, locally known as kalan susu and kambodja.

Flos convolutus was originally reduced by Linnaeus, by error, to Plumiera alba Linn., in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 944, but in Sp. Pl. ed. 2 (1762) 307 he placed it, with doubt, under Plumiera obtusa Linn., in which he was followed by Lamarck, Loureiro, Burman f., and Willdenow. Flos convolutus Rumph. is apparently the whole basis of Plumeria acutifolia Poir., which, however, although the commonly used name for the species, is antedated by about one year by Plumiera acuminata Aiton.

ALSTONIA R. Brown

ALSTONIA SCHOLARIS (Linn.) R. Br. in Mem. Wern. Soc. 1 (1809) 75.

Echites scholaris Linn. Mant. 1 (1867) 55.

Lignum scholare Rumph. Herb. Amb. 2: 246, t. 82.

Not represented in our Amboina collections. Lignum scholare Rumph. was originally reduced by Linnaeus, Syst. ed. 10 (1759) 945, to Tabernaemontana citrifolia Linn., with which species it has very little in common. Burman f., Fl. Ind. (1768) 69, erroneously reduced it to Tabernaemontana alternifolia Linn. It is cited by Linnaeus in the original description of Echites scholaris Linn.; it is, at least in part, the basis of this species and hence of Alstonia scholaris (Linn.) R. Br. I can see no valid reason for considering that the plant figured by Rumphius is other than the one described, yet various authors, following R. Brown and A. de Candolle, have considered that the description refers to Alstonia scholaris R. Br. and the figure to Alstonia spectabilis R. Br.

ALSTONIA SUBSESSILIS Miq. Ann. Mus. Bot. Lugd. Bat. 4 (1868) 140. Cofassus citrina Rumph. Herb. Amb. 3: 30, t. 15.

AMBOINA, Hitoe messen, Robinson Pl. Rumph. Amb. 77, October 10, 1913, on forested limestone hills, altitude about 150 meters.

Previously no definite determination of *Cofassus citrina* Rumph. has been made, other than Burman's statement that

it belonged in the *Apocynaceae* and Teysmann's opinion, quoted by Hasskarl, Neue Schlüssel (1866) 48, that it was doubtfully a representative of the genus *Alstonia*. The species is known only from Amboina. The specimen cited above is apparently identical with "IV-A-55" cultivated in the botanic garden at Buitenzorg, Java, from Amboina, under the unpublished name *Alstonia hoedti* T. & B.

TABERNAEMONTANA Plumier

TABERNAEMONTANA CAPSICOIDES sp. nov.

Capsicum silvestre Rumph. Herb. Amb. 4: 133, t. 67.

AMBOINA, Batoe merah, Robinson Pl. Rumph. Amb. 76 (type), August 11, 1913, on cleared hillsides, altitude 25 to 40 meters; Hitoe messen, Pl. Rumph. Amb. 75, October 14, 1913, in forests, altitude about 200 meters.

Frutex vel arbor parva, glabra; foliis in paribus valde inaequalibus, oblongis, chartaceis, usque ad 13 cm longis, utrinque subaequaliter angustatis, basi acutis vel leviter acuminatis, apice acuminatis, acuminis obtusis vel breviter apiculatis, nervis tenuibus, utrinque 10 ad 12; cymis terminalibus vel in axillis superioribus, plerumque pedunculatis, dichotomis, ebracteolatis, paucifloris; floribus tenuiter pedicellatis, calycis lobis brevibus, obtusis, intus glandulosis, corollae tubo circiter 14 mm longo; folliculis 2 ad 3 cm longis, oblongis, prominente rostrato-acuminatis, patulis, curvatis, leviter 2-carinatis, seminibus 4 ad 6.

A glabrous shrub or small tree 2 to 7 meters high, the branches and branchlets slender, subterete, pale-gray. Leaves oblong, those of each pair distinctly unequal in size, one one-half to two-thirds longer than the other, chartaceous, oblong, somewhat shining, brownish-olivaceous on the upper surface when dry, paler beneath, 5 to 13 cm long, 1.5 to 4.5 cm wide, subequally narrowed to the acute or somewhat acuminate base and to the distinctly acuminate apex, the acumen blunt or shortly apiculate; lateral nerves slender, spreading, somewhat curved, 10 to 12 on each side of the midrib, the reticulations obscure; petioles slender, about 5 mm long. Cymes terminal and in the upper axils, usually peduncled, dichotomous, few-flowered, slender, ebracteolate, 3 to 4 cm long. Flowers white, their pedicels slender, about 1 cm long. Calyx about 3 mm long, the lobes broadly ovate, obtuse to rounded, 1 to 1.5 mm long; glands small, oblong, 0.5 mm long. Corolla-tube slender, cylindric, about 14 mm long, the lobes oblong, 5 to 6 mm long. Stamens inserted at about the upper two-thirds. Follicles in pairs, spreading, somewhat curved, oblong-cylindric, 2 to 3 cm long, about 7 mm in

diameter, slightly 2-keeled, prominently rostrate-acuminate, the acumen slender, acute, 3-angled. Seeds 4 to 6.

Previously the status of Capsicum silvestre Rumph. had not been definitely determined, although Loureiro, Fl. Cochinch. (1790) 117, cites it under Tabernaemontana bufalina Lour. Loureiro's species, however, was described from Cochin-China material and is manifestly not the form described and figured by Rumphius. Some authors, following Loureiro's suggestion, have thought that the drawing of the fruits represented another species, T. bovina Lour., but this is certainly not the case. I have described the form as a new species with some hesitation, for I have not been able definitely to determine the status of Tabernaemontana corymbosa Roxb. This species is described in Roxburgh's Flora Indica, ed. 2, 2 (1832) 25, from specimens originating in the Moluccas. The description is entirely inadequate, as follows:

 $T.\ corymbosa$ R. Leaves petioled, oblong. Corymbs terminal, ample, decompound, all the primary divisions dichotomous. Anthers enclosed. A native of the Moluccas.

As interpreted by other authors, however, A. de Candolle, Hooker f., and King and Gamble, Tabernaemontana corymbosa Roxb. has little to do with the Amboina form above described and is typified by specimens collected in Penang, as described by Wallich, Bot. Reg. sub t. 1273. It seems probable that two entirely different plants are involved in Tabernaemontana corymbosa Roxb., and that the one described by Roxburgh himself, Fl. Ind. ed. 2, 2 (1832) 25, may be the same as Tabernaemontana capsicoides Merr. In examining Rumphius's figure of Capsicum silvestre it should be borne in mind that the fruits are drawn on a scale very much larger than that of the leaves.

TABERNAEMONTANA DIVARICATA (Linn.) R. Br. ex Roem. & Schultes Syst. 4 (1819) 427.

Nerium divaricatum Linn. Sp. Pl. (1753) 209.

Nyctanthes acuminata Burm. f. Fl. Ind. (1768) 5.

Nerium coronarium Jacq. Coll. 1 (1786) 138.

Tabernaemontana coronaria Willd. Enum. Hort. Berol. (1809) 275.

Flos manilhanus Rumph. Herb. Amb. 4: 87, t. 39.

This widely cultivated shrub is not represented in our Amboina collections. The form figured is the one with double flowers and was introduced into Amboina during Rumphius's time. It is cited by various authors under one or another of the synonyms listed above: by Burman f. in the original description of *Nyctanthes acuminata*; by Lamarck under *Nerium coro-*

narium Jacq.; by Roemer and Schultes under Tabernaemontana divaricata R. Br., its proper name; and by Willdenow, A. de Candolle, and Miquel under Tabernaemontana coronaria Willd. Rumphius surmised that the species was introduced into the Moluccas from Manila, whence his specific name; the species is not a native of the Philippines, but is occasionally found in cultivation here.

ALYXIA * Banks

ALYXIA LAURINA Gaudich. Bot. Freyc. Voy. (1826) 451, t. 62.

Pulassarium Rumph. Herb. Amb. 5: 32, t. 20.

Amboina, Salahoetoe, Robinson Pl. Rumph. Amb. 74, November 27, 1913, in forests, altitude about 850 meters.

There is little doubt that *Pulassarium* Rumph. is the same as *Alyxia laurina* Gaudich., the type of which was from Rawak Island in the Moluccas. I am not in a position to express any opinion as to the relationships of *Alyxia laurina* Gaudich. and *Alyxia stellata* Roem., as I have seen no material representing the latter species, and Forster's original description is entirely inadequate. Roxburgh, Fl. Ind. ed. 2, 1 (1832) 699, referred *Pulassarium verum* Rumph. to *Alyxia stellata*, citing *Gynopogon stellatum* Forst. as a possible synonym, and gave an ample description from specimens grown in the botanic garden at Calcutta that originated in Amboina. Gaudichaud, Bot. Freyc. Voy. (1826) 451, thought that it was the same as his *Alyxia laurina*. A. de Candolle, Prodr. 8 (1844) 347, excludes the Rumphian synonym under *Alyxia laurina* Gaudich. and places it as a possible synonym of *Alyxia stellata* Roem. and Schultes.

Pulassarium spurium Rumph., described in the same chapter with *Pulassarium verum*, Herb. Amb. 5: 33, is indeterminable from the data now available. It is probably a representative of the *Apocynaceae*, but not an *Alyxia*.

RAUWOLFIA Plumier

RAUWOLFIA SERPENTINA (Linn.) Hook. f. Fl. Brit. Ind. 3 (1882) 632.

Ophioxylon serpentinum Linn. Sp. Pl. (1753) 1043.

Radix mustelae I alba Rumph. Herb. Amb. 7: 29, t. 16.

Radix mustelae II rubra Rumph. Herb. Amb. 7: 30.

This species is not represented in our Amboina collections. According to Rumphius it was introduced into Amboina from Java; it may no longer occur in the island. Radix mustelae Rumph. was originally reduced by Linnaeus to Ophioxylon serpentinum Linn., in Amoen. Acad. 4 (1759) 136, Syst. ed. 10

^{*} Retained name, Vienna Code; Gynopogon Forst. (1776) is older.

(1759) 1303, which is certainly correct, at least for the form figured and described as Radix mustelae I alba. Linnaeus has been followed by most authors in this reduction, but among his contemporaries, Burman f., Fl. Ind. (1768) 42, erroneously placed it under Ophiorrhiza mungos Linn. Hasskarl, Neue Schlüssel (1866) 188, refers I alba to Ophioxylon serpentinum Linn., to O. album Gaertn., a synonym, and, with doubt, to O. majus Hassk., apparently also a synonym; and refers II rubra to Ophioxylon trifoliatum Gaertn. Rumphius's description of II rubra agrees with the characters of Gaertner's species, but Ophioxylon trifoliatum Gaertn. is generally considered to be a synonym of O. serpentinum Linn.=Rauwolfia serpentina (Linn.) Hook. f.

OCHROSIA Jussieu

OCHROSIA OPPOSITIFOLIA (Lam.) K. Schum. in Engl. & Prantl Nat. Pflanzenfam. 4² (1895) 156.

Cerbera oppositifolia Lam. Encycl. 1 (1783) 62 (type!).

Calpicarpum ? lamarckii Don Gen. Syst. 4 (1838) 100 (type!).

Ochrosia salubris Blume Mus. Bot. 1 (1850) 158.

Cerbera salutaris Blume Bijdr. (1826) 1033, non Lour.

Bleekeria salubris Hassk. Retzia 1 (1855) 41.

Lactaria salubris Rafin. Sylva Tellur. (1838) 162 (type!); Hassk. in Nederl. Kruidk. Arch. 4 (1859) 9.

Lactaria salubris Rumph. Herb. Amb. 2: 255, t. 84.

This species is not represented in our Amboina collections. Most of the above synonyms are typified by the Rumphian figure and description; Cerbera oppositifolia Lam., Calpicarpum lamarckii Don, Cerbera salutaris Blume (?), Lactaria salubris Rafin., and Bleekeria salubris Hassk, wholly so. The description of Ochrosia salubris Blume was based primarily on Amboina specimens with the addition of a reference to the Rumphian figure and description. Loureiro, Fl. Cochinch. (1790) 136, cites Lactaria salubris Rumph, as a synonym of Cerbera salutaris Lour., but the status of Loureiro's species is very uncertain; from the description it cannot possibly be the same as Scaevola frutescens (Mill.) Krause, to which it has been reduced. Ochrosia elliptica Labill. may be identical with Ochrosa oppositifolia (Lam.) K. Schum., but I consider that O. borbonica Gmel. represents an entirely different species. Material from the southern Philippines and from the Marianne Islands, agrees very closely with Rumphius's figure and description, and I think certainly represents Lactaria salubris Rumph.=Ochrosia oppositifolia (Lam.) K. Schum.*

^{*} See Valeton in Ann. Jard. Bot. Buitenz. 12 (1895) 226.

CERBERA Linnaeus

CERBERA MANGHAS Linn. Sp. Pl. (1753) 208.

Cerbera odollam Gaertn. Fruct. 2 (1791) 193. Cerbera lactaria Ham. in DC. Prodr. 8 (1844) 353. Tanghinia lactaria Don in Sweet Hort. Brit. ed. 3 (1839) 461. Arbor lactaria Rumph. Herb. Amb. 2: 243, t. 81.

Arbor lactaria terrestris Rumph. Herb. Amb. 2: 245.

AMBOINA, Robinson Pl. Rumph. Amb. 72, along the seashore near the town of Amboina, August 8, 1913; Gelala, Pl. Rumph. Amb. 71, September 26, 1913, on hills near the seashore, altitude about 6 meters, locally known as manga berabu.

Arbor lactaria and Arbor lactaria terrestris certainly represent but a single species, and that is Cerbera manghas Linn., as actually described by Linnaeus from Osbeck's Javan specimen. Arbor lactaria Rumph, was originally reduced by Linnaeus to Cerbera manghas Linn., in Stickman Herb. Amb. (1754) 10. Amoen. Acad. 4 (1759) 122, in which he was followed by many early authors. Valeton, Ann. Jard. Bot. Buitenz. 12 (1895) 245. has proposed to keep Cerbera odollam Gaertn. (C. manghas Linn.) and Cerbera lactaria Ham. distinct, but after a careful consideration of the descriptions and of a large series of specimens I am now of the opinion that but a single species is represented. I deliberately reinstate the Linnean name, Cerbera manghas Linn., as this is manifestly the species amply described by him in the original description of the species from Osbeck's specimens. Some of the references added by him include Tabernaemontana dichotoma R. Br.*

PARAMERIA Bentham

PARAMERIA BARBATA (Blume) K. Schum. in Engl. & Prantl Nat. Pflanzenfam. 42 (1895) 162.

Parsonsia barbata Blume Bijdr. (1826) 1042. Ecdysanthera barbata Miq. Fl. Ind. Bat. 2 (1857) 451. Cortex consolidans Rumph. Herb. Amb. 5: 30, t. 19.

This species is not represented in our Amboina collections. No previous reduction of Cortex consolidans Rumph, has been suggested other than that it belongs in the Apocynaceae. figure, which is apparently an excellent one, and the description agree closely with the characters of Parameria glandulifera (Wall.) Benth., of P. philippinensis Radlk., and of P. vulneraria Radlk., all of which are apparently forms of a single species. Blume's specific name, being the oldest, is here retained.

ICHNOCARPUS * R. Brown

ICHNOCARPUS sp.?

Funis papius parvifolius Rumph. Herb. Amb. 5: 15, t. 11.

This has been reduced with Funis papius latifolius Rumph. to Cynanchum mauritianum Lam., to Periploca mauritianum Poir., and to Streptocaulon mauritianum Don, following Lamarck's original doubtful reference of it to the first. It manifestly represents a species distinct from Funis papius latifolius and is perhaps a species of Ichnocarpus. The form described as Funis papius rugosior Rumph. in this chapter is quite undeterminable from Rumphius's description. Hasskarl, Neue Schlüssel (1866) 90, has suggested that it may be a species of Melodinus.

NERIUM Linnaeus

NERIUM INDICUM Mill. Gard. Dict. ed. 8 (1768) no. 2.

Nerium odorum Soland. in Ait. Hort. Kew. 1 (1789) 297.

Oleander sinicus Rumph. Herb. Amb. 7: 15, t. 9, f. 1.

This commonly cultivated plant is not represented in our Amboina collections. *Oleander sinicus* Rumph. was reduced by Loureiro, Fl. Cochinch. (1790) 115, to *Nerium oleander* Linn. However, it appears to be *Nerium indicum* Mill., rather than *N. oleander* Linn., and is here so placed. The form described as II minor, Rumph. l. c. 16, is of doubtful status. It may be a form of this species, or it may be an entirely different plant. The description is too short to warrant a guess at its true identity.

WRIGHTIA R. Brown

WRIGHTIA sp.?

Andawas s. Dawas Rumph. Herb. Amb. 2: 89.

Andawas is briefly described in the chapter with Cassia fistula silvestris=Cassia javanica Linn., and Hamilton and Miquel both thought that it might be a species of Cassia. The description of the seed characters, however, is unmistakably that of an apocynaceous plant. Teysmann, cited by Hasskarl, Neue Schlüssel (1866) 30, considers that it represents Wrightia pubescens R. Br.; this is possibly the correct disposition of it. Rumphius's material was from Bali Island, where it is known as andawas or dawas, so that field work in Bali should eventually yield material and data that will enable some botanist to determine the status of the plant intended by the description.

^{*} Retained name, Vienna Code; Quirivelia Poir. (1804) is older. 144971—28

VALLARIS Burman f.

VALLARIS GLABRA (Linn.) O. Kuntze Rev. Gen. Pl. (1891) 417.

Pergularia glabra Linn. Mant. 1 (1767) 53.

Vallaris pergulana Burm. f. Fl. Ind. (1768) 51.

Emericia pergularia Roem. & Schultes Syst. 4 (1819) 401.

Echites hircosa Roxb. Hort. Beng. (1814) 85, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 18.

Vallaris ovalis Mig. Fl. Ind. Bat. 2 (1857) 427.

Flos pergulanus Rumph. Herb. Amb. 5: 51, t. 29, f. 2.

This species is not represented in our Amboina collections. According to Rumphius the plant was not a native of Amboina, but was introduced from Java. Flos pergulanus Rumph. has been cited under all the synonyms given above, including the original publications of both Pergularia glabra Linn. and Vallaris pergulana Burm. f. It commonly appears in botanical literature as Vallaria pergulana Burm. f., but the oldest name is here adopted. The species is of special interest in that it is the type of the genus Vallaris.

APOCYNACEAE indet.

Funis cratium Rumph. Herb. Amb. 5: 16, t. 12.

This figure is sufficiently characteristic, so that the species should be readily recognized when once collected in Amboina. It is apparently a scandent species of *Apocynaceae* and much resembles *Urceola*. Funis cratium littorea Rumph., Herb. Amb. 5: 17, may belong in the same group, but the description is too short and imperfect to warrant more than a guess at its position. It may belong in either the *Asclepiadaceae* or the *Apocynaceae*.

ASCLEPIADACEAE

FINLAYSONIA Wallich

FINLAYSONIA OBOVATA Wall. Pl. As. Rar. 2 (1831) 48, t. 162.

Olus crepitans mas Rumph. Herb. Amb. 5: 480, t. 178, f. 2.

Amboina, Paso, Robinson Pl. Rumph. Amb. 89, July, September, and October, 1913, climbing over trees in mangrove swamps, locally known as kapok kapok.

The description and figure agree perfectly with Wallich's species, which is found in mangrove swamps from India to the Malay Peninsula, the Philippines, Java, Celebes, and Amboina. No previous reduction of *Olus crepitans mas* has been suggested.

CALOTROPIS R. Brown

CALOTROPIS GIGANTEA (Linn.) Dryand. in Ait. Hort. Kew. ed. 2, 2 (1811) 78.

Asclepias gigantea Linn. Sp. Pl. (1753) 214. Madorius Rumph. Herb. Amb. 7: 24, t. 14, f. 1.

This characteristic species, fairly well figured by Rumphius, is not represented in our Amboina collections. *Madorius* Rumph. was originally reduced to *Asclepias gigantea* Linn. by Linnaeus, in Amoen. Acad. 4 (1759) 136, which as *Calotropis gigantea* Dry. is manifestly the correct disposition of it. It has been very generally cited in botanical literature under *Calotropis gigantea* Dry. The form described by Rumphius in the same chapter as Madorius II albifloris is probably merely a variant of *Calotropis gigantea* Dry.

CYNANCHUM Linnaeus

CYNANCHUM OVALIFOLIUM Wight Contrib. (1834) 57.

Sussuela esculenta II femina Rumph. Herb. Amb. 5: 467, t. 173, f. 2. Amboina, Hatiwe and Liang, Robinson Pl. Rumph. Amb. 86, September and November, 1913, in thickets, altitude 15 to 100 meters, locally known as sayor susu laki laki.

The specimen agrees perfectly with Rumphius's figure and description and certainly represents Sussuela esculenta mas. I am unable from the published descriptions alone to distinguish this Amboina specimen from Cynanchum ovalifolium Wight. If it does not represent Wight's species, then it represents a very closely allied one. The only previously suggested reduction of Rumphius's species was Hasskarl's doubtful reference of it to Secamone lineata Blume, where manifestly it does not belong.

CYNANCHUM sp.?

Sussuela esculenta I mas Rumph. Herb. Amb. 5: 467, t. 173, f. 1.

AMBOINA, Hoetoemoeri road, Robinson Pl. Rumph. Amb. 85, September 30, 1913, climbing over trees, altitude about 40 meters.

The specimen probably represents the form that Rumphius described, but this is uncertain, and its further identification is impossible at this time as the material presents only leaves and mature follicles. Sussuela esculenta mas Rumph. is certainly no Dischidia, where it was doubtfully placed by Hasskarl. A possible generic identification of it is Telosma.

GYMNEMA R. Brown

GYMNEMA SYRINGAEFOLIUM (Decne.) Boerl. Handl. Kenn. Fl. Nederl. Ind. 2 2 (1899) 437.

Bidara syringaefolia Decne. in DC. Prodr. 8 (1844) 623.
Marsdenia syringaefolia Decne. in Ann. Sci. Nat. II 9 (1838) 275,
t. 10, f. G.

Olus crudum minus Rumph. Herb. Amb. 5: 75, t. 40, f. 2?

Gymnema syringaefolium Boerl. is probably the correct disposition of Olus crudum minus Rumph. The first reduction was that made by Murray, Syst. (1774) 213, who cited the Rumphian name as a synonym of Apocynum reticulatum Linn., where it certainly does not belong, although following Murray it has been so listed by Loureiro, Willdenow, Poiret, Roemer and Schultes, Henschel, Don, Dietrich, and Pritzel. Lamarck, Encycl. 1 (1783) 214, placed it under Apocynum indicum Lam., a synonym of A. reticulatum Linn. Wight and Arnott and Dietrich placed it with doubt under Gymnema tingens W. & A.; and likewise Decaisne and Miquel, with doubt, placed it under the synonym Bidara tingens Decne.

GYMNEMA sp.

Olus crudum majus Rumph. Herb. Amb. 5: 76, t. 40, f. 1.

The figure represents a species apparently very similar to Olus crudum minus Rumph., but its status cannot be determined without material from Amboina representing it. Wight, Don, Decaisne, and Miquel placed it with doubt under Marsdenia angustifolia Wight, and Dietrich placed it under the synonym Pergularia angustifolia Dietr. The species described and figured by Rumphius is probably a Gymnema; it certainly is not Marsdenia angustifolia Wight.

TYLOPHORA R. Brown

TYLOPHORA sp.?

Olus crepitans I mas Rumph. Herb. Amb. 5: 469, t. 174, f. 1.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 92, August and September, 1913, climbing over trees at low altitudes.

I am not certain that the specimen is a *Tylophora*, although the specimen cited evidently represents *Olus crepitans mas* of Rumphius. The only previously suggested reduction of it was Hasskarl's doubtful reference of it to *Hoya latifolia* Don, where it certainly does not belong.

DISCHIDIA R. Brown

DISCHIDIA NUMMULARIA R. Br. Prodr. (1810) 461.

Nummularia lactea minor I minima Rumph. Herb. Amb. 5: 472, t. 176, f. 1.

AMBOINA, Way tommo and Kati-kati, Robinson Pl. Rumph. Amb. 88, August and October, 1913, on trees in mangrove swamps and on Melaleuca at an altitude of about 100 meters.

This reduction was made by R. Brown in the original description of *Dischidia nummularia* R. Br. and is apparently the correct disposition of the Rumphian species. Miquel, however,

Fl. Ind. Bat. 2 (1857) 508, reduced it to Dischidia gaudichaudii Decne. Beccari, Malesia 2 (1886) 267, who made a critical study of the Malayan species of Dischidia known up to that time, retained it under Dischidia nummularia R. Br. and reduced D. gaudichaudii Decne. as a variety.

DISCHIDIA RUMPHII Miq. Fl. Ind. Bat. 2 (1857) 509 (type!).

Nummularia lactea minor II major Rumph. Herb. Amb. 5: 473, t. 176, f. 2.

AMBOINA, Batoe merah River and Wakal, Robinson Pl. Rumph. Amb. 87, August and November, 1913, on trees at low altitudes.

This reduction is made in the original description of *Dischidia rumphii* Miq. So far as can be determined from Miquel's description, the species was based wholly on Rumphius's description and figure. The dried specimens do not agree especially well with the figure, chiefly on account of the shrinkage and wrinkling of the leaves in drying. Doctor Robinson, who studied the fresh material in connection with Rumphius's description and figure, considered that the specimens certainly represented Rumphius's species.

DISCHIDIA sp.

Olus crepitans II femina Rumph. Herb. Amb. 5: 469, t. 174, f. 2.

AMBOINA, Ayer putri and Hitoe lama, Robinson Pl. Rumph. Amb. 93, September and October, 1913, on trees, altitude 5 to 150 meters.

The specimen agrees fairly closely with Rumphius's figure and description, the latter being very brief. The chief differences between the specimen and the figure appear to be due to the shrinking of the leaves in drying. This species of *Dischidia* appears to be undescribed in modern literature.

CONCHOPHYLLUM Blume

CONCHOPHYLLUM IMBRICATUM Blume Bijdr. (1826) 1061.

Dischidia imbricata Steud. Nomencl. ed. 2, 1 (1840) 519. Pustula arborum Rumph. Herb. Amb. 5: 473, t. 175, f. 3.

AMBOINA, Paso and Wakeroe, Robinson Pl. Rumph. Amb. 91, October, 1913, on trees in mangrove swamps.

Pustula arborum Rumph. was reduced by Blume to Conchophyllum imbricatum in the original description of that species, and this is apparently the correct disposition of it. Henschel placed it with doubt under Dischidia collyris Wall., and Miquel reduced it with Conchophyllum imbricatum Blume to Collyris major Vahl, apparently mislead by Vahl's erroneous reduction of Pustula arborum Rumph. in the original description of his species; Collyris major Vahl is a true Dischidia—Dischidia major (Vahl)

(Dischidia collyris Wall.). Beccari, Malesia 2 (1886) 258, gives a detailed description of Conchophyllum imbricatum Blume with figures.

HOYA R. Brown

HOYA LUTEA Kostel. Algem. Med.-Pharm. Fl. 3 (1834) 1083 (type!).

Hoya lutea Decne. in DC Prodr. 8 (1844) 635 (type!).

Corona ariadnes lutea Rumph. Amb. 5: 465.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 82, August and November, 1913, on cliffs at low altitudes.

The specimen cited above apparently represents Corona ariadnes lutea Rumph, which is the whole basis of both Hoya lutea Kostel. and Hoya lutea Decne., Decaisne overlooking the fact that Kosteletzky had already published the binomial. The specimen has yellow flowers and differs from Hoya sussuela (Roxb.) Merr. (Corona ariadnes punicea Rumph.) not only in its leaf characters, but also in its different, very much smaller flowers, which are but about 12 mm in diameter.

HOYA RUMPHII Blume Bijdr. (1826) 1065.

Acanthostemma rumphii Blume Rumphia 4 (1848) 29, Mus. Bot. 1 (1849) 58.

Nummularia lactea major I fusca Rumph. Herb. Amb. 5: 470, t. 175, f. 1.

AMBOINA, Lateri and Hitoe lama, Robinson Pl. Rumph. Amb. 84, 605, August and November, 1913, in forests, altitude 150 to 200 meters, locally known as buah tali tali.

Poiret, in Lamarck Encycl. Suppl. 1 (1810) 407, reduced the Rumphian species with doubt to *Apocynum agglomeratum* Poir., which was based on specimens from Santo Domingo, and to which it certainly does not refer. Blume apparently based his description of *Hoya rumphii* on Javan specimens, but in the original description of the species reduced the Rumphian illustration as a synonym, which has been accepted by most subsequent authors. The Amboina specimens may or may not be the same as the Javan form.

HOYA SUSSUELA (Roxb.) comb. nov.

Asclepias sussuela Roxb. Hort. Beng. (1814) 20, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 31.

· Hoya corona ariadnes Blume Rumphia 4 (1848) 31, t. 182, 185.

Hoya speciosa Decne. in DC. Prodr. 8 (1844) 634.

Hoya ariadna Decne, in DC. Prodr. 8 (1844) 635 (type?).

Corona ariadnes punicea Rumph. Herb. Amb. 5: 464, t. 172.

Amboina, Amahoesoe and Batoe merah River, Robinson Pl. Rumph. Amb. 90, August and September, 1913, on trees and rocks, sea level to 100 meters altitude, locally known as bunga pleta.

The type of Asclepias sussuela Roxb. was from the Moluccas. While the original description is very short, the species is certainly the same as the one later minutely described and figured by Blume as Hoya corona ariadnes. Roxburgh reduces Corona ariadnes punicea to his species in the original description of Asclepias sussuela Roxb.; his species has been reduced to Hoya imperialis Lindl. (1846), which is perhaps another synonym of Hoya sussuela (Roxb.) Merr. The type of Hoya speciosa Decne. was from Amboina. Hoya ariadna Decne. was apparently based wholly on the Rumphian description and figure. Blume, Bijdr. (1826) 1063, originally reduced the Rumphian species to Hoya coronaria Blume, a species based on Javan material and distinct from Hoya sussuela (Roxb.) Merr. (H. corona ariadnes Blume).

HOYA ALBA Kostel. Allgem. Med. Pharm. Fl. 3 (1834) 1084 (type!).

Nummularia lactea major II alba Rumph. Herb. Amb. 5: 470.

This species is of entirely doubtful status. It was referred by Henschel to *Hoya diversifolia* Blume, while Hasskarl, Neue Schlüssel (1866) 148, thought that it might be *Cyrtoceras multiflora* Heynh.=*Hoya multiflora* Blume=*Centrostemma multiflorum* Decne. There is no reason, however, for considering it other than a true *Hoya*.

HOYA ELEGANS Kostel. Allgem. Med. Pharm. Fl. 3 (1834) 1084 (type!).

Nummularia lactea major III (albo-purpurea) Rumph. Herb. Amb.
5: 471.

Amboina, Soja and Hitoe messen, $Robinson\ Pl.\ Rumph.\ Amb.\ 83,\ 604,$ August and October, 1913, in light forests, altitude 175 to 300 meters, locally known as $bunga\ nasi.$

Hasskarl, Neue Schlüssel (1866) 148, thought that this Rumphian form might be a synonym of *Hoya macrophylla* Blume, a species originally described from Javan material. *Hoya elegans* Kostel. was based wholly on the Rumphian description, and this name is here retained.

HOYA sp.

Nummularia lactea minor Rumph. Herb. Amb. 5: 471 (in expl. pl.) t. 175, f. 2.

AMBOINA, Hitoe lama, $Robinson\ Pl.\ Rumph.\ Amb.\ 81$, November 1, 1913, on trees, altitude about 150 meters.

The specimen agrees fairly closely with the figure, which was placed by Lamarck, Encycl. 1 (1783) 214, with doubt under *Apocynum tiliaefolium* Lam., where it certainly does not belong. The species figured is manifestly a *Hoya*, but I cannot locate any description of it in Rumphius, merely the name in the explanation of the plate.

TELOSMA Coville

(Prageluria N. E. Brown)

TELOSMA ODORATISSIMA (Lour.) Coville in Contr. U. S. Nat. Herb. 9 (1905) 384.

Cynanchum odoratissimum Lour. Fl. Cochinch. (1790) 166.

Pergularia odoratissima Sm. Ic. (1790-93) t. 16.

Apocynum odoratissimum Lour. ex Henschel Vita Rumph. (1833) 202.

Asclepias odoratissima Roxb. Hort. Beng. (1814) 20, nomen nudum, Fl. Ind. ed. 2, 2 (1832) 46.

Flos siamicus Rumph. Herb. Amb. 7: 58, t. 26, f. 1.

This widely cultivated species is not represented in our Amboina collections. Flos siamicus Rumph. was reduced by Loureiro to Cynanchum odoratissimum Lour. in the original description of that species, which, as Telosma odoratissima Goville, is certainly the correct disposition of it. It has been cited by various authors under all of the synonyms listed above. The species is generally known as Pergularia odoratissima Sm.; but Pergularia of Linnaeus is an entirely different African genus, as pointed out independently by Coville and by N. E. Brown, the former proposing the generic name Telosma in 1905 for the Indo-Malayan species of Pergularia, and the latter the name Prageluria in 1907.

ASCLEPIADACEAE indet.

Funis papius latifolius Rumph. Herb. Amb. 5: 14, t. 10.

A woody vine, not represented in our Amboina collections. Lamarck, Encycl. 2 (1786) 236, placed it with doubt under Cynanchum mauritianum Lam., which Poiret later referred to Periploca mauritiana Poir., in Lam. Encycl. 5 (1804) 188, and Don, to Streptocaulon mauritianum Don. It is certainly not this species, whatever it may be.

CONVOLVULACEAE

MERREMIA Dennstedt.

MERREMIA UMBELLATA (Linn.) Hallier f. in Engl. Bot. Jahrb. 16 (1893) 552.

Convolvulus umbellatus Linn. Sp. Pl. (1753) 155.

Convolvulus cymosus Desr. in Lam. Encycl. 3 (1791) 556.

Ipomoea cymosa R. & S. Syst. 4 (1819) 241.

Ipomoea bifida Roth Nov. Pl. Sp. (1821) 118.

Convolvulus bifidus Vahl Symb. Bot. 3 (1794) 30.

Convolvulus laevis minor I femina, II mas Rumph. Herb. Amb. 5: 431, t. 158.

Amboina, Hatalai Robinson Pl. Rumph. Amb. 404, October 24, 1913, roadsides at an altitude of about 300 meters.

The reduction of Convolvulus laevis Rumph. to Convolvulus cymosus Desr. was made by Desrouss, in Lamarck's Encycl. 3 (1791) 556, but the description was based on an actual specimen collected by Sonnerat. Vahl, Symb. 3 (1794) 30, makes the reduction to his Convolvulus bifidus in the original description of that species, but as was the case with Convolvulus cymosus, the description was based on an actual specimen. There is not the slightest doubt that the figure given by Rumphius represents the common and well-known species, Merremia umbellata Hallier f. The Amboina specimen cited above is the form with white flowers, designated by Hallier as Merremia umbellata var. orientalis Hallier f.; but this varietal name, if the variety be maintained, should probably give place to the designation cymosa, this being the oldest name for the oriental form.

MERREMIA PELTATA (Linn.) Merr. comb. nov.

Convolvulus peltatus Linn. Sp. Pl. (1753) 1194 (type!). Ipomoea peltata Choisy Mém. Soc. Phys. Genèv. 6 (1833) 452 (type!). Convolvulus laevis indicus major (alba) Rumph. Herb. Amb. 5: 428, t. 157, f. 1, 2.

AMBOINA, Hoetoemoeri road, Robinson Pl. Rumph. Amb. 401, September 30, 1913, climbing on trees at an altitude of about 225 meters; flowers white.

Convolvulus laevis indicus major "Rumf. amb. 6. p. 428. t. 159" is the whole basis of Convolvulus peltatus Linn., and the species must be interpreted solely from the Rumphian figure and description. Two plants are figured on the plate, not clearly separable, and probably both are forms of one species; but figure 2 is indicated by Rumphius as belonging with the description Linnaeus designated as the type of his species. Merremia numphaeifolia (Blume) Hallier f. (Ipomoea nymphaeifolia Blume) has been distinguished from the Linnean species by Hallier f. as distinct because of its yellow flowers, the Amboina plant having white flowers, both as described by Rumphius and as the field note on the Amboina specimens, cited above, shows. I cannot, however, detect a single other character by which the two species can be distinguished; and I consider it very probable that Merremia nymphaeifolia Hallier f. must be reduced to M. peltata (Linn.) Merr., as a variety or form with yellow flowers. I have for purposes of comparison a very full series of specimens from the Philippines and some material from Java, named by Hallier himself as Merremia numphaeifolia. All of our numerous Philippine specimens have yellow flowers. Figure 1 of plate 157, which is *supposed* to represent the second species "rubra" of Rumphius, I take to represent the same form as figure 2, that is, typical *Merremia peltata* (Linn.) Merr., but it may prove to be *Merremia nymphaeifolia* (Blume) Hallier f. (see below, under *Ipomoea rumphii* Miq.).

OPERCULINA S. Manso

OPERCULINA TURPETHUM (Linn.) S. Manso Enum. Subst. Braz. (1836) 16.

Convolvulus turpethum Linn. Sp. Pl. (1753) 155. Batatta mammosa Rumph. Herb. Amb. 5: 370 p. p., et t. 131 p. p.

Nothing corresponding to this plant as described and figured by Rumphius, wholly or in part, appears in our Amboina collections. Batatta mammosa Rumph. is apparently a composite species, the flowers and leaves of a convolvulaceous plant being figured with the tubers of a different plant attached. From the figure of the tubers, as given by Rumphius, this part of the drawing is almost certainly referable to Dioscorea, not to the Convolvulaceae. The figure of the leaves and flowers agrees very closely with the common and widely distributed Operculina turpethum S. Manso, and I believe this to be the correct disposition of Batatta mammosa Rumph., at least for the most part. The description of the flowers also applies very closely and does not apply so well to any other species of Convolvulaceae known to me. The following part of the description is especially significant:

Flores primo sunt oblonga, acuminata, & viridia capita instar Capsici fructus, diuque clausa manent, dein sese aperiunt in albos campaniformes flores uti in Batatta, sed majores sunt, ac longiore tubo donati, qui profundo insident ac viridi calici, ante meridiem tantum aperti.

The stems, however, characteristically winged in *Operculina* turpethum, are described as "rotunda, & glabra," the leaves as resembling those of *Ipomoea batatas* Poir., but:

flaccidiora, * * * glabriora, magisque sinuosa, inferius nullos gerunt angulos, sed rotundas auriculas instar foliorum Sirii [Piper].

As to the origin of the plant, note:

Naturalis ejus patria sunt Manilhae, & magna inprimis Mindanau, vulgo Magendanau [i. e. Mindanao] dicta, ex qua Pampangenses quidam hanc in Amboinam adduxerunt.

The first reduction of *Batatta mammosa* was suggested by Loureiro, Fl. Cochinch. (1790) 108, who placed it under his *Convolvulus mammosus*. While the specific name is manifestly

taken from Rumphius, the plant actually described was a cultivated specimen known in Cochin-China as khoai tu, in all probability a cultural variety of *Ipomoea batatas* Poir. Choisy transferred it to Ipomoea, as I. mammosa (Lour.) Choisy, in Mém, Soc. Phys. Genèv. 6 (1833) 475, and in de Candolle's Prodromus, 9 (1854) 389, retained it as an Ipomoea under his "Species non satis notae." Miquel, Fl. Ind. Bat. 2 (1857) 620, compiled his description from Rumphius and Loureiro and placed it at the end of the genus under the heading "Species denuo examinandae." No previous author has suggested that the plant figured and described by Rumphius was based on material from more than one species, and nobody has previously suggested that it is, for most part, referable to Operculina turpethum S. Manso. an explanation that is on the whole fairly satisfactory. Prain * suggests that the form figured by Rumphius may be the same as Convolvulus platypeltis Span., of Timor, which Choisy placed as a doubtful synonym of *Ipomoea campanulata* Linn.; Spanoghe's species is entirely unknown to me, nor do I understand the status of the form interpreted by Hallier f. as Merremia mammosa Hallier f. In regard to Rumphius's statement as to the Philippine origin of the plant he figured and described I can merely add that no known Philippine species agrees with the description and figure in toto.

IPOMOEA Linnaeus

IPOMOEA BATATAS (Linn.) Poir. in Lam. Encycl. 6 (1804) 14.

Convolvulus batatas Linn, Sp. Pl. (1753) 154. Batatas edulis Choisy Conv. Or. (1834) 53. Batatta Rumph. Herb. Amb. 5: 367, t. 130.

Amboina, Hoenoet, Robinson Pl. Rumph. Amb. 402, October 8, 1913, cultivated, altitude about 125 meters, locally known as batatas.

The reduction of *Batatta* to *Convolvulus batatas* Linn. was first made by Linnaeus, in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 922, Sp. Pl. ed. 2 (1762) 220, and this has been followed by numerous other authors, some under the Linnaen name *Convolvulus batatas*, others under the name *Ipomoea batatas* (Linn.) Poir. There is no doubt whatever as to the American origin of this plant, but Rumphius's opinion is well worth quoting in connection with the matter. He states:

Communis opinio est, quam etiam sequor usque ad ulteriorem decisionem, *Batattas* primum per Castilienses ex Americanis regionibus in Manilhas, inde in Moluccas, ac Portugalos in reliquas porro Indiae Orientalis regiones

^{*} Journ. As. Soc. Beng. 74² (1905) Extra Number 307.

fuisse introductas, quod nomen etiam testatur apud omnes fere Orientales populos, qui Batattas colunt.

The names cited by Rumphius, batattas, uby castila, ima castila (that is, Spanish yam), lutu castila, castela, and camotes, are all of American origin or refer to the origin of the plant in the Moluccas through the agency of the Spaniards.

IPOMOEA REPTANS (Linn.) Poir. in Lam. Encycl. Suppl. 3 (1813) 460.

Convolvulus reptans Linn. Sp. Pl. (1753) 158, p. p. quoad syn. Rheed. Ipomoea aquatica Forsk. Fl. Aegypt. Arab. (1775) 44.
Olus vagum Rumph. Herb. Amb. 5: 419, t. 155, f. 1.

This characteristic species is not represented in our Amboina collections, but *Olus vagum* Rumph. is unmistakably identical with *Ipomoea reptans* Poir. (*I. aquatica* Forsk.) as currently interpreted. The reduction was first made by Linnaeus himself, in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 132, Sp. Pl. ed. 2 (1762) 225, which is additional evidence in support of the idea that Linnaeus's conception of *Convolvulus reptans* was based on *Ballel*, Rheed. Hort. Malabar. 11: 107, t. 52, rather than on the actual specimen so named in his herbarium. Hallier f., Meded. Rijks Herb. (1910) 21, states that the actual specimen in the Linnean herbarium is *Merremia caespitosa* Hallier f., a species totally different from *Ipomoea reptans* Poir. as currently interpreted.*

I accept the plate and description of Rheede, cited by Linnaeus, as typifying *Convolvulus reptans* Linn., as this interpretation will avoid the change of the specific name for the plant now called *Merremia caespitosa* Hallier f. Linnaeus, Syst. ed. 10 (1759) 922, erroneously reduces *Olus vagum* to *Convolvulus medium* Linn., with which species it has little in common. Choisy considers *Convolvulus medium* to be *Anisaea medium* (Linn.) Choisy, but Index Kewensis reduces it to *Ipomoea denticulata* Choisy.

IPOMOEA PES-CAPRAE (Linn.) Roth Nov. Pl. Sp. (1821) 109.

Convolvulus pes-caprae Linn. Sp. Pl. (1753) 159.

Convolvulus bilobatus Roxb. Hort. Beng. (1814) 14, Fl. Ind. ed. 2, 1 (1832) 485.

Convolvulus maritimus Desr. in Lam. Encycl. 3 (1791) 550.

Convolvulus marinus major Rumph. Herb. Amb. 5: 433, t. 159, f. 1.

AMBOINA, Robinson Pl. Rumph. Amb. 400, September 13, 1913, on the beach near the town of Amboina.

^{*} See Merrill in Philip. Journ. Sci. 7 (1912) Bot. 244, for a discussion of the synonymy involved.

The reduction of *Convolvulus marinus* Rumph, to *Convolvulus pes-caprae* Linn. was first made by Linnaeus, in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 132, Syst. ed. 10 (1759) 924, Sp. Pl. ed. 2 (1762) 226, which is certainly the correct disposition of it, although it is now placed in *Ipomoea* rather than in *Convolvulus*. The figure, which is good, has very generally been cited by subsequent authors either under the Linnaen name or under the various synonyms cited above.

IPOMOEA GRACILIS R. Br. Prodr. (1810) 484; House in Ann. N. Y. Acad. Sci. 18 (1908) 248.

Ipomoea denticulata Choisy in Mém. Soc. Phys. Genèv. 6 (1833) 447. Ipomoea littoralis Blume Bijdr. (1826) 713.

Convolvulus denticulatus Desr. in Lam. Encycl. 3 (1791) 540, non Ipomoea denticulata R. Br.

Ipomoea choisyana W. F. Wight in Contr. U. S. Nat. Herb. 9 (1905) 298.

Convolvulus riparius Rumph. Herb. Amb. 5: 435, t. 159, f. 2.

AMBOINA, Paso and Batoe gadjah, Robinson Pl. Rumph. Amb. 399, August 5, 1913, in thickets back of the beach and on grassy hillsides, altitude about 200 meters.

No definite reduction has been suggested for Convolvulus riparius Rumph, other than that it represents a species of Ipomoea. The figure corresponds closely with Ipomoea gracilis, but the description as given by Rumphius does not agree so well. It is probable that more than one species was included by Rumphius in his description, as he indicates two forms under the names minor and major. Again this may be the correct disposition of Convolvulus marinus minor Rumph. Herb. Amb. 5: 433, that Hasskarl, Neue Schlüssel (1866) 143, suggests may be the same as Ipomoea rugosa Choisy or Convolvulus flagelliformis Roxb. Both of these, however, are synonyms of Ipomoea beladamboe R. & S., a species known only from India and Ceylon, so that the Rumphian plant has nothing to do with the latter species, whatever else it may be.

IPOMOEA INDICA (Burm.) comb. nov.

Convolvulus indicus Burm. Index Universalis Herb. Amb. 7 (1755) [6] (type!).

Ipomoea congesta R. Br. Prodr. (1810) 485.

Convolvulus caeruleus Rumph. Herb. Amb. 5: 432.

The Rumphian species is the whole basis of *Convolvulus indicus* Burm., which is not listed in Index Kewensis. Hasskarl, Neue Schlüssel (1866) 143, reduced it to *Ipomoea nil* (Linn.) Roth. While Roth's species occurs in Amboina, Rumphius's description

conforms much more closely to *Ipomoea congesta* R. Br. than to *I. nil* Roth, and I believe that it is here correctly placed.

IPOMOEA RUMPHII Miq. Fl. Ind. Bat. 2 (1857) 605 (type!).

Convolvulus laevis indicus major II rubra Rumph. Herb. Amb. 5: 429 (excl. t. 157, f. 1).

Ipomoea rumphii Miq. is a species of doubtful status and is based wholly on Rumphius, from whose description it must be interpreted. Our Amboina specimens do not include sufficient material to solve the status of the species. The figure, t. 157, f. 1. supposed to represent Convolvulus laevis indicus major rubra of Rumphius, is discussed under Merremia peltata (Linn.) Merr, above, as almost certainly representing that species: there are no characters in the two figures by which two species can be distinguished. The description, however, calls for a plant with cordate leaves, usually solitary flowers, the corolla purplish toward the apex, and the tube white within and deep purple at the base. I suggest that the description for the most part applies to Stictocardia campanulata (Linn.) Merr. (S. tiliaefolia Hallier f.), and that Ipomoea rumphii Miq. may thus be a synonym of this species. Additional material from Amboina will be necessary before the matter can be definitely settled, for no Stictocardia appears in our collections, although the species is certainly to be expected in Amboina.

IPOMOEA PELTATA Choisy var. NIGRICANS Hassk. in Abhandl. Naturf. Gesellsch. 19 (1866) 284 (Neue Schlüssel (1866) 142) (type!).

Convolvulus laevis indicus major III nigra Rumph. Herb. Amb. 5: 429.

The variety proposed by Hasskarl is based solely on Rumphius, and an exact interpretation of it must wait for a more intensive botanical exploration of Amboina. It may prove to be *Stictocardia campanulata* Merr.

QUAMOCLIT Tournefort

QUAMOCLIT PENNATA (Desr.) Bojer Hort. Maurit. (1837) 224.

Ipomoea quamoclit Linn. Sp. Pl. (1753) 159.

Convolvulus pennatus Desr. in Lam. Encycl. 3 (1791) 567.

Quamoclit vulgaris Choisy in Mém. Soc. Phys. Genev. 6 (1833) 434. Flos cardinalis Rumph. Herb. Amb. 5: 421, t. 155, f. 2.

Amboina, Soeli, Robinson Pl. Rumph. Amb. 403, November 25, 1913, in roadside thickets, altitude about 10 meters.

The Rumphian figure is an excellent one, thus rendering the accurate identification of his *Flos cardinalis* very definite. It was first reduced by Linnaeus to his *Ipomoea quamoclit*, in

Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 132, Sp. Pl. ed. 2 (1762) 227, which reduction has been followed by numerous other authors, either under the Linnean name or under the various synonyms cited above. It is to be noted that Rumphius describes both the red- and the white-flowered forms. The species is a native of tropical America, introduced into the East at an early date in colonial history.

BORAGINACEAE

CORDIA Linnaeus

CORDIA SUBCORDATA Lam. Ill. 1 (1791-97) 421.

Cordia orientalis R. Br. Prodr. (1810) 498.

Cordia campanulata Roxb. Hort. Beng. (1814) 17 (type!), Fl. Ind. ed. 2, 1 (1832) 590, 593.

Cordia rumphii Blume Bijdr. (1826) 843.

Novella nigra Rumph. Herb. Amb. 2: 226, t. 75.

Amboina, Paso, Robinson Pl. Rumph. Amb. 385, October 31, 1913, along the seashore, locally known as kanawa.

Novella nigra was originally, but erroneously, reduced by Linnaeus to Cordia sebestena Linn., in Stickman Herb. Amb. (1754) 10, Amoen. Acad. 4 (1759) 122, Syst. ed. 10 (1759) 936, Sp. Pl. ed. 2 (1762) 274, in which he was followed by Burman f. and by Willdenow. Cordia sebestena Linn. is, however, a different species, confined to tropical America. Cordia subcordata Lam. was based entirely on a specimen collected by Commerson on Pralin or Praslin Island, but Poiret cites the Rumphian name under this species, as doubtfully representing it, in Lamarck's Encycl. 7 (1806) 41. Novella nigra is the whole basis of Cordia campanulata Roxb., as definitely published in the Hortus Bengalensis (1814) 17, by citation of Rumphius; and it is also wholly or in part the basis of Cordia rumphii Blume Bijdr. (1826) 843. The species is of wide distribution in Malaya and Polynesia, always growing along the seashore.

CORDIA MYXA Linn. Sp. Pl. (1753) 190.

Arbor glutinosa Rumph. Herb. Amb. 3: 155, t. 97.

Amboina, Waë, Robinson Pl. Rumph. Amb. 383, November 29, 1913, along roadsides at low altitudes, locally known as gandal.

This was originally reduced by Linnaeus to *Cordia myxa* Linn., in Stickman Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 124, Syst. ed. 10 (1759) 936, and after examining abundant material from various parts of India, the Philippines, and Malaya and the Amboina specimens, I am inclined to consider this disposition of *Arbor glutinosa* the correct one. The species is

rather variable, and it certainly includes the Philippine form described as *Cordia blancoi* Vidal. Hasskarl, Neue Schlüssel (1866) 61, considers that the species described by Rumphius is *Cordia subpubescens* Spanogh., which de Candolle, Prodr. 9 (1845) 482, retains as a valid species, the description of which does not appear to me to apply to *Arbor glutinosa* Rumph.

TOURNEFORTIA Linnaeus

TOURNEFORTIA ARGENTEA Linn. f. Suppl. (1781) 133.

Buglossum lanuginosum Rumph. Herb. Amb. 4: 119, t. 55. (err. t. 45).

AMBOINA, Latoe halat, Robinson Pl. Rumph. Amb. 384, September 22, 1913, along the seashore, locally known as kol laut.

This was reduced, with doubt, by Linnaeus to *Tournefortia* foetidissima Linn., in Stickman Herb. Amb. (1754) 17, Amoen. Acad. 4 (1759) 127, but *Tournefortia foetidissima* Linn. is an American species entirely different from *T. argentea* Linn. f. The reduction of the Rumphian name *Buglossum lanuginosum* to *Tournefortia argentea* Linn. f. seems first to have been made by Willdenow, Sp. Pl. 1² (1797) 793, which is certainly the correct disposition of it.

VERBENACEAE

CALLICARPA Linnaeus

CALLICARPA CUSPIDATA Roxb. Fl. Ind. ed. 2, 1 (1832) 394.

Mamanira alba Rumph. Herb. Amb. 4: 124, t. 59.

AMBOINA, Hitoe messen, Robinson Pl. Rumph. Amb. 299, November 6, 1913, in forests at an altitude of about 100 meters, "buds lilac but flowers white, fruit deep lilac, not white."

Doctor Robinson notes on the field label that he considers the identification of this specimen with $Mamanira\ alba$ as certain; the only discrepancy between the specimen and the description is that the fruits are deep lilac, not white. Hasskarl, Neue Schlüssel (1866) 84, has suggested that $Mamanira\ alba$ is $Sponia\ pubigera\ Miq.\ (=Trema)$, but this cannot possibly be the case in view of the ample data given by Rumphius in the description. The inflorescences in Rumphius's figure are very poorly drawn.

Schauer * has reduced Callicarpa cuspidata Roxb., which was very briefly described by Roxburgh from specimens originating in the Moluccas (probably Amboina), to the Indian Callicarpa lanata Linn.=Callicarpa tomentosa (Linn.) Murr., in which he is certainly in error. Nor is the Australian Callicarpa pedun-

^{*} De Candolle Prodromus 11 (1847) 644.

culata R. Br., which Schauer cites as a synonym, properly placed, as it is very distinct from both Callicarpa tomentosa (Linn.) Murr. and C. cuspidata Roxb. Callicarpa cuspidata Roxb. is manifestly allied to C. longifolia Lam., but it differs in many characters and is certainly specifically distinct from Lamarck's species.

Possibly referable here also is *Robinson Pl. Rumph. Amb. 300*, from Binting, Amboina, August 13, 1913, but the leaves are less pubescent, less acuminate, and the flowers are described by Doctor Robinson as being pale lilac. Doctor Robinson thought that this might be Mamanira Rumph., Herb. Amb. 4: 123, t. 58, but it does not agree very well with the figure, which represents a plant with 4- and 5-nerved leaves.

CALLICARPA CANA Linn. Mant. 2 (1771) 198?

Mamanira Rumph. Herb Amb. 4: 123, t. 58.

Hasskarl, Neue Schlüssel (1866) 84, thought that this might possibly be *Sponia amboinensis* Planch.=*Trema amboinensis* Blume, while Teysmann, l. c., suggested that it might be a species of *Callicarpa*. I consider that Teysmann is correct in his supposition, as the description is unmistakably that of a *Callicarpa*, while the figure is a fair representation of *Callicarpa* except for the very poorly drawn inflorescences. I am of the opinion that the widely distributed *Callicarpa cana* Linn. was the species intended, but nothing approaching this species is represented in our Amboina collections, although *Rel. Robins.* 2465, from Macassar, Celebes, is unquestionably referable to it. Further field work in Amboina will doubtless clear up any doubt there may exist as to the exact identity of *Mamanira*.

CALLICARPA sp.

Frutex ceramicus Rumph. Herb. Amb. 4: 124, t. 60.

This was described from material originating in Ceram and Banda and is undoubtedly a species of *Callicarpa*. Hasskarl, Neue Schlüssel (1866) 84, suggested that it might be *Grewia inaequalis* Blume, but the drawing certainly represents no *Grewia*, while the description seems to conform to *Callicarpa*. Field work is necessary in Ceram and Banda before the position of *Frutex ceramicus* can be definitely settled.

Hasskarl, Neue Schlüssel (1866) 84, also suggests that Perlarius alter silvestris may be a species of *Callicarpa*, but the description is too incomplete to warrant a definite reference of this to any particular genus.

TECTONA * Linnaeus f.

TECTONA GRANDIS Linn. f. Suppl. (1781) 151.

Tectona theka Lour. Fl. Cochinch. (1790) 137.

Jatus s. caju jati Rumph. Herb. Amb. 3: 34, t. 18.

Amboina, Binting, Robinson Pl. Rumph. Amb. 298, July 29, 1913, on open hillsides at low altitudes, locally known as jati.

The teak tree is too well known to need discussion here. The Rumphian description and figure are unmistakably *Tectona grandis*, and the figure has been very generally cited by various authors under one or the other of the synonyms listed above.

The species is widely distributed in the Indo-Malayan region; in some countries it is very extensively cultivated.

PREMNA Linnaeus

PREMNA OBTUSIFOLIA R. Br. Prodr. (1810) 512.

Premna cyclophylla Miq. Fl. Ind. Bat. 2 (1858) 899?

Premna laevigata Mig. Fl. Ind. Bat. 2 (1858) 895?

Premna integrifolia auct. plur. non Linn.

Gumira litorea (G. silvestris) Rumph. Herb. Amb. 3: 209 t. 134.

AMBOINA, Robinson Pl. Rumph. Amb. 307, August 8, 1913, along the beach near the town of Amboina, locally known as gumira laut, that is, gumira of the beach or ocean.

The specimen cited above is unmistakably Gumira litorea Rumph., as it agrees perfectly with his description and figure, in its habitat, and in its native name, gumira laut. Its proper name in our present system of classification is not so certain, but it appears to me to be identical with Premna obtusifolia R. Br., also a coastal shrub or small tree, of northeastern Australia; the two species described by Miguel, cited above as doubtful synonyms; and the widely distributed coastal form in the Indo-Malayan region that has very consistently, but erroneously, been called Premna integrifolia Linn. The name "Folium hircinum" of Rumphius, another species of Premna, has been confused by several authors with plate 134. The first reduction of Gumira laut was by Linnaeus in the original publication of his Premna integrifolia, Mant. 2 (1771) 252, who cites Rumphius as "Folium hirci Rumph. amb. 3. p. 28. t. 134," thus originating the confusion between the description of Folium hircinum and t. 134 of Rumphius, the figure cited being that of Gumira laut; t. 133 pertains to Folium hircinum. However, Premna integrifolia Linn. is based on Cornutia corymbosa Burm. f. Fl. Ind. (1768) 132, t.

^{*} Retained name, Vienna Code; Theka Adans. (1763) is older.

41, f. 1, which in turn was based wholly on Ceylon material, "Cornutoides Linn. Fl. Zeyl. 195, ubi descr." and "Sambucus zevlanica odorata aromatica Herm. herb. Burm. zeyl. 209." Hermann's specimens, as noted by Trimen, Fl. Cevl. 3 (1895) 352, are Premna serratifolia Linn.; and according to strict priority Premna corumbosa (Burm. f.) Rottl. & Willd., in Gesell. Nat. Freunde Neue Schr. 4 (1803) 187, 188, is the correct name for the plant that Linnaeus named Premna integrifolia, even though C. B. Clarke and Trimen have retained Premna corymbosa Rottl. & Willd. as a species entirely distinct from Premna integrifolia Linn, and P. serratifolia Linn, all three are typified by the same material. Roxburgh, Fl. Ind. ed. 2, 3 (1832) 77, placed Gumira litorea under his Premna spinosa, but Premna spinosa Roxb. was described from Indian specimens. C. B. Clarke reduced Premna spinosa to Premna integrifolia Linn. with which Gumira litorea has been confused. Miguel, Fl. Ind. Bat. 2 (1858) 894, repeats the confusion between Gumira litorea and Folium hircinum, citing as a synonym of Premna corumbosa (Burm, f.) Rottl, & Willd. "Gumira litorea vel Folium hirci Rumph. Herb. Amb. III. p. 289. tab. 134."

PREMNA NITIDA K. Sch. Fl. Kaiser Wilhelmsl. (1889) 121.

Premna subglabra Merr. in Philip. Journ. Sci. 1 (1906) Suppl. 234? Folium hircinum Rumph. Herb. Amb. 3: 208, t. 133.

Amboina, various localities, such as Amahoesoe, Paso, and Soja, from sea level to an altitude of about 375 meters, Robinson Pl. Rumph. Amb. 308, August to October, 1913, locally known as gumira and gumira dara.

The identity of the cited material with Folium hircinum is certain, but as is the case with the preceding species, its proper name under our present system of classification is uncertain. seems to be the same as both the comparatively recently described Premna nitida K. Sch., of New Guinea, and P. subglabra Merr., a common and widely distributed Philippine species, but it is very probable that it has an older published name, perhaps Suggested reductions by various authors have been to Premna integrifolia Linn. (see above under Premna obtusifolia R. Br.), to Premna cordifolia Roxb., to P. tomentosa Willd., to P. foetida Reinwardt, and to Gumira foetida Hassk., with none of which it agrees sufficiently to warrant considering Folium hircinum referable to any of them. Whatever else it may be. Folium hircinum is certainly very closely allied to Premna gaudichaudii Schauer, of the Marianne Islands, and definitely seems to be identical with the New Guinea Premna nitida K. Schum.

VITEX Linnaeus

VITEX MOLUCCANA Blume Bijdr. (1826) 813.

Tittius Rumph. Herb. Amb. 3: 38, t. 20.

AMBOINA, Robinson Pl. Rumph. Amb. 296, August 23, November 26 and 29, 1913, in light woods at Liang, Gelala, and Waë, altitude 15 to 20 meters, locally known as titti and daun titti.

This very characteristic species is known only from Amboina and Banda, the specimens cited above agreeing perfectly with Rumphius's figure and description and with a series of specimens collected in Amboina by Botter, Heyne, Teysmann 5031, and Binnendyck and with Teysmann 5158 from Banda. Poiret, in Lamarck Encycl. 5 (1804) 163, suggested that t. 20 might be Clerodendron infortunatum Linn., but erroneously cites the description of Tittius litorea. It has nothing in common with that species. The plate is Vitex moluccana, but the description cited is a Clerodendron. Blume cites the Rumphian plant in the original description of his Vitex moluccana, in which he has been followed by later authors. It seems very probable that the two forms indicated by Rumphius as Tittius alba and Tittius rubra are merely slight variants of the same species.

VITEX COFASSUS Reinw. ex Blume Bijdr. (1826) 813.

Cofassus Rumph. Herb. Amb. 3: 28, t. 14B.

Amboina, Liang, Robinson Pl. Rumph. Amb. 302, November 29, 1913, in open fields at an altitude of about 15 meters, locally known as gofassa.

This is unquestionably *Cofassus* of Rumphius for the most part. The description includes at least two forms, and the figure presents a species of Vitex with simple and trifoliolate leaves on the same plant. Cofassus mas, C. alba, and C. femina should probably all be referred here, although C. mas, described as having simple and trifoliolate leaves may be due to a mixture of material, and as Teysmann suggests, in Hasskarl Neue Schlüssel (1866) 48, the trifoliolate-leaved form may be Vitex timoriensis Walp.=V. littoralis Dcne.=V. parviflora Juss. Cofassus is cited by Reinwardt in the original description of Vitex cofassus. The material cited above agrees with a series of specimens from Amboina, from Celebes (Heyne), and with material from New Guinea collected by Hollrung and by Weinland. It is strongly suspected that Vitex monophylla K. Sch., Fl. Kaiser Wilhelmsl. (1889) 121, of New Guinea, will prove to be identical with Vitex cofassus Reinw.

VITEX TRIFOLIA Linn. Sp. Pl. (1753) 638.

Lagondium vulgare Rumph. Herb. Amb. 4: 48, t. 18.

AMBOINA, Robinson Pl. Rumph. Amb. 304, August 13, 1912, along the beach at Binting, locally known as lagondi. The same form is also represented by Rel. Robins. 2449 from Macassar, Celebes, and Rel. Robins. 2493 from Boeton.

The reduction of *Lagondium vulgare* to *Vitex trifolia* Linn. was first made by Linnaeus, in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1122, Sp. Pl. ed. 2 (1763) 890, which is certainly the correct disposition of it. It is very widely distributed along the seashore throughout the Indo-Malayan region.

VITEX NEGUNDO Linn. Sp. Pl. (1753) 638.

Lagondium litoreum Rumph. Herb. Amb. 4: 50, t. 19.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 305, September 18, 1913, along the beach, locally known as lagondi.

The specimen, as Doctor Robinson notes, shows every intergradation between what is called *Vitex trifolia* Linn. and *V. negundo* Linn., a character that is also presented by many herbarium specimens sometimes placed under one name, sometimes under the other. It is strongly suspected that the two species, at least as currently interpreted, are really not distinct. The reduction of *Lagondium litoreum* Rumph. to *Vitex negundo* Linn. was made by Linnaeus, in Stickman Herb. Amb. (1754) 15, Amoen. Acad. 4 (1759) 126, Syst. ed. 10 (1759) 1122, which disposition of it has been accepted by practically all authors. Lamarck, Encycl. 2 (1788) 612, placed it under his *Vitex paniculata*, but *Vitex paniculata* Lam. is a synonym of *Vitex negundo* Linn. The "species" has the range of *Vitex trifolia* Linn.

Lagondium nigrum Rumph., extensively treated by Rumphius, Herb. Amb. 3: 52, and supposed to grow in Buru Island, is probably purely an imaginary plant. Regarding it, Hasskarl, Neue Schlüssel (1866) 75, states: "fabula, nec arboris descriptio enarratur; arbor ex hac fabula intelligi haud potest."

PETRAEOVITEX Oliver

PETRAEOVITEX MULTIFLORA (Sm.) comb. nov.

Petrea multiflora Sm. in Rees Cyclop. 27 (1817) no. 2. Petraeovitex riedelii Oliver in Hook. Ic. 15 (1883) 16, t. 1420. Funis quadrifidus Rumph. Herb. Amb. 5: 4, t. 3.

This characteristic species is not represented in our Amboina collections. Rumphius's description and figure agree closely

with those of Petraeovitex riedelii Oliver, the type of which was from the neighboring island, Buru. I have here adopted what is manifestly the oldest valid specific name for the species. Petrea multiflora Sm. was based on a specimen gathered by Christopher Smith on Honimoa Island, one of the Moluccas, in the original description of which Funis quadrifidus Rumph. is cited as a synonym. I am indebted to Dr. A. B. Rendle, of the British Museum, who has kindly looked up both the original description and the type specimen of Smith's species and informs me, under date of July 22, 1916, that there is no doubt as to its identity with Petraeovitex riedelii Oliver. Smith's species. which has been previously considered as one of doubtful status, was excluded from the Verbenaceae by Schauer, in DC. Prodr. 11 (1857) 620, where, however, it manifestly belongs. The only other suggested reductions of Funis quadrifidus Rumph, was Teysmann's opinion, quoted by Hasskarl, Neue Schlüssel (1866) 89, that it was an *Illigera* (Hernandiaceae) and Hasskarl's own opinion that it was possibly a species of Vitis; both of these suggested reductions are manifestly wrong.

GMELINA Linnaeus

GMELINA VILLOSA Roxb. Hort. Beng. (1814) 46, nomen nudum, Fl. Ind. ed. 2, 3 (1832) 86.

Radix deiparae Rumph. Herb. Amb. 2: 124, t. 39. Radix deiparae spuria Rumph. Herb. Amb. 2: 125, sed 1: t. 40.

AMBOINA, near Paso, common everywhere, and at Batoe mera, Robinson Pl. Rumph. Amb. 306, July 20, 1913, locally known as kranjang, kelanjan, and daun kranjang.

This is certainly Radix deiparae Rumph. and is equally certainly Gmelina villosa Roxb. Roxburgh's description was based on specimens from Penang, but he also cites Radix deiparae Rumph. Herb. Amb. 2: 124, t. 39, as representing his species. Radix deiparae spuria, which Rumphius thought distinct from his R. deiparae, undoubtedly is also referable to Gmelina villosa Roxb., although by many authors it has been referred to Gmelina asiatica Linn. The former was erroneously reduced by Linnaeus to Gmelina asiatica Linn., in Stickman Herb. Amb. (1754) 9, Amoen. Acad. 4 (1759) 121, while the latter also has been very generally referred to the same species. It is to be noted that in the Herbarium Amboinense t. 40 of Volumes I and II have been transposed.

CLERODENDRON Linnaeus

CLERODENDRON SPECIOSISSIMUM Paxt. Mag. Bot. 3 (1837) 217, 271.

Clerodendron fallax Lindl. in Bot. Reg. (1844) sub. t. 19.

Petasites agrestis Rumph. Herb. Amb. 4: 108, t. 49.

Amboina, Paso and near the town of Amboina, Robinson Pl. Rumph. Amb. 303, July 20 and 23, 1913, along the banks of streams, locally known as daun picha piring.

This was reduced by Linnaeus, Mant. 2 (1771) 423, followed by Murray, Syst. Veg. (1774) 483, to Clerodendron infortunatum Linn., which it somewhat resembles; it is, however, quite distinct from the Linnean species. This reduction was followed by Willdenow, Blume, Walpers, Hasskarl [Retzia 1 (1855) 59]. Schauer, and Miquel. Loureiro, Fl. Cochinch. (1790) 388, placed it under his Volkameria petasites, apparently taking his specific name from Rumphius. However, Volkameria petasites Lour., as described, is very different from Petasites agrestis Rumph. Hasskarl, Neue Schlüssel (1866) 82, suggests that it may be the same as Clerodendron viscosum Vent., which, however, has been considered by all recent authors as a synonym of Clerodendron infortunatum Linn.

In adopting the name Clerodendron speciosissimum Paxt. I have followed the synonymy as given by Schauer, in DC. Prodr. 11 (1847) 666, but have had no opportunity to examine the original description of either Clerodendron speciosissimum Paxt. or C. fallax Lindl. The Amboina specimens, however, agree perfectly with Javan material named C. speciosissimum Lindl. as well as with material from the Caroline Islands, Samoa, and Cuba (cultivated) named Clerodendron fallax Lindl. Neither is given for Java by Koorders, Exkurs. Fl. Java 3 (1912) 137–139, although Clerodendron fallax Lindl. was apparently described from Javan specimens; perhaps this form is included in Koorders's work under Clerodendron paniculatum Linn.

CLERODENDRON COMMERSONII (Poir.) Spreng. Syst. Veg. 2 (1825) 758.

Volkameria commersonii Poir. in Lam. Encycl. 8 (1808) 688.

Volkameria nereifolia Roxb. Fl. Ind. ed. 2, 3 (1832) 64.

Clerodendron neriifolium Wall. Cat. (1829) no. 1789.

Clerodendron inerme auct. plur. p. p.

Jasminum litoreum Rumph. Herb. Amb. 5: 86, t. 46.

AMBOINA, Ayer putri, Robinson Pl. Rumph. Amb. 297, July 28, 1913, along tidal streams.

This widely distributed coastal plant is commonly named Clerodendron inerme (Linn.) Gaertn., but several authors have

maintained the Malayan-Polynesian form specifically distinct from the typical Indian Clerodendron inerme (Linn.) Gaertn. If this distinction be maintained, the Malayan-Polynesian form must be called Clerodendron commersonii (Poir.) Spreng., which is the oldest valid name for it. Jasminum litoreum was first reduced by Linnaeus to Volkameria inermis Linn., in Stickman Herb. Amb. (1754) 19, Amoen. Acad. 4 (1759) 129, Syst. ed. 10 (1759) 1122, and all succeeding authors have followed Linnaeus, citing the Rumphian figure under either Volkameria inermis Linn. or Clerodendron inerme Gaertn.

CLERODENDRON RUMPHIANUM DeVriese & Teysm. in Flora 43 (1860) 622, ex Hassk.; DeVriese in Miq. Ann. Mus. Lugd.-Bat. 3 (1867) 252. Petasites amboinensis Rumph. Herb. Amb. 4: 107, t. 48.

Nothing resembling this plant occurs in our Amboina collections. There can be no doubt whatever that the Rumphian *Petasites amboinensis* represents the same species as the plant described by DeVriese, who reduces the Rumphian name as a synonym. The type material of *Clerodendron rumphianum* DeVr., as described in Miquel's Annales, was from Amboina and Ceram.

AVICENNIA Linnaeus

AVICENNIA OFFICINALIS Linn. Sp. Pl. (1753) 110.

Mangium album Rumph. Herb. Amb. 3: 115, t. 76.

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 301, October 29, 1913, in mangrove swamps.

Mangium album, as figured, is certainly the typical form of Avicennia officinalis Linn., which is found along the seashore throughout the tropics of the Old World. Early authors generally made no attempt to reduce this species; Linnaeus, in Stickman Herb. Amb. (1754) 13, merely indicating that it pertained to the genus Rhizophora. Hasskarl, Neue Schlüssel (1866) 57, considers that the description included both Avicennia officinalis Linn. and the allied A. alba Blume. The species is enormously variable in size, often flowering when less than one meter high, but it is normally a tree, frequently reaching a large size.

LABIATAE

ROSMARINUS Linnaeus

ROSMARINUS OFFICINALIS Linn. Sp. Pl. (1753) 23.

Rosmarinus verus sinensis Rumph. Herb. Amb. 6: 26.

This is merely mentioned by Rumphius, under the description of Crategonum amboinicum Rumph., but is unquestionably the

LABIATAE 457

true European Rosmarinus officinalis Linn., which is cultivated for medicinal purposes in sandy soil near the sea in the Philippines and, probably, in various parts of Malaya. It is very generally known in the Philippines by its Spanish name, roméro.

LEUCAS Burman

LEUCAS ZEYLANICA (Linn.) R. Br. ex Spreng. Syst. 2 (1825) 472 (ceylanica).

Phlomis zeylanica Linn. Sp. Pl. (1753) 586.

Herba admirationis Rumph. Herb. Amb. 6: 39 quoad descr., excl. t. 16, f. 1.

AMBOINA, Batoe mera, Robinson Pl. Rumph. Amb. 475, July 20, 1913, in open places at low altitudes.

The description appears to me to apply unmistakably to the widely distributed Leucas zeylanica R. Br., but the plant figured is certainly the next species, Leucas lavandulifolia Sm. Burman f., Fl. Ind. (1768) 127, originally reduced Herba admirationis to Leonurus indicus Linn., which is correct as to the plant figured. Murray, Syst. (1774) 450, placed it under Phlomis zeylanica Linn., in which he was followed by Willdenow, Persoon, Poiret, Henschel, and Pritzel, while Don and Dietrich cite it under Leucas zeylanica R. Br.; Walpers, Repert. 3 (1845) 877, refers it to Leucas linifolia Spreng.—Leucas lavandulifolia Sm., the correct disposition of the figure, but scarcely of the description.

LEUCAS LAVANDULIFOLIA Sm. in Rees Cyclop. 20 (1813) no. 2.

Leonurus indicus Linn. Syst. ed. 10 (1759) 1101, Sp. Pl. ed. 2 (1763) 817, non Leucas indica R. Br.

Leucas linifolia Spreng. Syst. 2 (1825) 743.

Herba admirationis Rumph. Herb. Amb. 6: t. 16, f. 1, excl. descr.

This species is not represented in our Amboina collections. The figure of *Herba admirationis* Rumph. unmistakably represents this species, but the description applies to *Leucas zeylanica* (Linn.) R. Br., above.

SALVIA Linnaeus

SALVIA PLEBEIA R. Br. Prodr. (1810) 501.

Tschintschau javanense Rumph. Herb. Amb. 6: 90; 7: t. 21, f. 2.

This reduction of *Tschintschau javanense* is probably correct. The plant described was from China and from Semarang, Java. The Chinese name is given by Rumphius as *tsinsau* and *siënthau*. Hasskarl, Neue Schlüssel (1866) 167, merely placed it in the *Labiatae*. It is, at least, a *Salvia*, whether or not *Salvia plebeia* R. Br.

MENTHA Linnaeus

MENTHA ARVENSIS Linn. Sp. Pl. (1753) 577.

Mentha crispa Rumph. Herb. Amb. 5: 267, t. 93, f. 2.

This species is not represented in our Amboina collections. The form figured and described by Rumphius, however, of which he never saw flowers or fruits, is the common mint introduced into the orient by the early Portuguese and Spanish explorers, and now widely, but not extensively, cultivated by the natives and Europeans in the Philippines (here known as yerba buena), and probably in other parts of the Indo-Malayan region. By Burman f., Fl. Ind. (1768) 129, it was erroneously reduced to Ocimum menthoides Linn.—Geniosporum prostratum Benth.

POGOSTEMON Desfontaines

POGOSTEMON CABLIN (Blanco) Benth. in DC. Prodr. 12 (1848) 156; Merr. in Philip. Journ. Sci. 7 (1912) Bot. 345.

Mentha cablin Blanco Fl. Filip. (1837) 473.

Pogostemon patchouly Pellet. in Mém Soc. Sci. Orléans 5 (1845) 277 t. 7.

Pogostemon suavis Ten. in Giorn. Bot. Ital, 2 (1847) 56.

Pogostemon patchouli Hook. Kew Journ. Bot. 1 (1849) 328, t. 11.

Melissa lotoria Rumph. Herb. Amb. 5: 292, t. 102, f. 1.

This species is not represented in our Amboina collections. The figure is poor and presents only a leafy branch greatly reduced in size. From the description, however, the plant is unmistakably *Pogostemon cablin* (Blanco) Benth., which is widely cultivated in the Indo-Malayan region. Walpers, Repert. 3 (1845) 516, thought that it might be the same as *Coleus atropurpureus* Benth., while Don reduced it to *Coleus aromaticus* Benth.—*Coleus amboinicus* Lour., perhaps by confusion with the latter species, which is figured on the same plate. It is manifestly no *Coleus*, but is certainly referable to *Pogostemon cablin* Benth.

DYSOPHYLLA Blume

DYSOPHYLLA AURICULARIA (Linn.) Blume Bijdr. (1826) 826.

Mentha auricularia Linn. Mant. 1 (1767) 81. Mentha foetida Burm. f. Fl. Ind. (1768) 126.

Majana foetida Rumph. Herb. Amb. 6: 41, t. 16, f. 2.

This species is not represented in our Amboina collections. The figure and the description unmistakably represent this well-known species. The reduction was made by Linnaeus in the original publication of *Mentha auricularia* Linn., and also by Burman f. in the original publication of *Mentha foetida* Burm. f. Henschel erroneously referred it to *Cyclostegia strobilifera* Benth.

LABIATAE 459

COLEUS Loureiro

COLEUS AMBOINICUS Lour. Fl. Cochinch. (1790) 372.

Plectranthus aromaticus Roxb. Fl. Ind. ed. 2, 3 (1832) 22, non Hort. Beng. (1814) 45.

Coleus aromaticus Benth. in Wall. Pl. As. Rar. 2 (1831) 16.

Coleus suganda Blanco Fl. Filip. (1837) 483.

Marrubium album amboinicum Rumph. Herb. Amb. 5: 294, t. 102, f. 2.

This species is not represented in our Amboina collections. The plant figured and described by Rumphius is certainly the same species as that described by Loureiro as Coleus amboinicus, the type of the genus Coleus. Loureiro described the species from specimens cultivated in Cochin-China and quotes the Rumphian figure and description as representing his species, also taking his specific name from this source; the plate, by error, is cited as 72 instead of 102. It was originally reduced by Linnaeus, in Stickman Herb, Amb. (1754) 22, Amoen, Acad. 4 (1759) 131, to Nepeta indica Linn.=Anisomeles indica (Linn.) O. Kuntze (A. ovata R. Br.), an entirely wrong disposition of it. Later authors have cited it under Coleus aromaticus Benth., a synonym of Loureiro's species. Plectranthus aromaticus Roxb., as originally published in Hort. Beng. (1814) 45, by citation of Rumphius Herb. Amb. 5: t. 101, is a synonym of Coleus scutellaroides (Linn.) Benth., but as described by Roxburgh, Fl. Ind. ed. 2, 3 (1832) 22, it is a synonym of Coleus amboinicus Lour.*

COLEUS TUBEROSUS (Blume) Benth. Lab. Gen. Sp. (1832) 59.

Plectranthus tuberosus Blume Bijdr. (1826) 838. Coleus parviflorus Benth. in DC. Prodr. 12 (1848) 72.

Glans terrestris costensis Rumph. Herb. Amb. 5: 372, t. 132, f 1.

This species is not represented in our Amboina collections, but Rumphius's figure and description apply unmistakably to *Coleus tuberosus*. The reduction seems first to have been made by Don, Gen. Syst. 4 (1838) 685, and the Rumphian figure has been cited under this species, sometimes with doubt, by Walpers, Dietrich, Bentham, and Miquel. Some authors have abandoned the name *Coleus tuberosus* (Blume) Benth. (1832) in favor of *Coleus parviflorus* Benth. (1848), on account of the use of the same specific name for another species by Richard, but *Coleus tuberosus* Richard dates from 1851 and is, of course, invalidated by *Coleus tuberosus* Benth.

^{*} See Robinson in Philip. Journ. Sci. 7 (1912) Bot. 414, 418.

COLEUS SCUTELLAROIDES (Linn.) Benth. in Wall. Pl. As. Rar. 2 (1831) 16.

Ocimum scutellaroides Linn. Sp. Pl. ed. 2 (1763) 834 (type!). Plectranthus scutellaroides Roxb. Fl. Ind. ed. 2, 3 (1832) 21. Majana (alba et rubra) Rumph. Herb. Amb. 5: 291, t. 101.

Amboina, Robinson Pl. Rumph. Amb. 473, July 18, 1913, in wet places in woods and along roadsides near the town of Amboina, locally known as mayana, mariana, and johanna.

Majana rubra Rumph. was originally and erroneously reduced by Linnaeus to Ocimum frutescens Linn., in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1105. Recognizing this error, however, Linnaeus, Sp. Pl. ed. 2 (1763) 834, made the Rumphian description and figure the whole basis of Ocimum scutellaroides Linn., which in turn is the basis of Coleus scutellaroides Benth. Burman f., Fl. Ind. (1768) 129, erroneously referred it to Ocimum gratissimum Linn.

COLEUS BLUMEI Benth. Lab. Gen. Sp. (1832) 56.

Majana aurea Rumph. Herb. Amb. 5: 296, t. 102, f. 3.

The form described and figured is one of the common cultivated types of *Coleus* with variegated leaves, commonly known as *Coleus blumei* Benth. Burman f., Fl. Ind. (1768) 130, placed it under *Ocimum scutellaroides* Linn.=*Coleus scutellaroides* Benth., from which, however, it appears to be sufficiently distinct. Miquel thought that this cultivated form was merely a variety of *Coleus scutellaroides* Benth. and considered it as *Coleus scutellaroides* Benth. var. *blumei* Miq. Fl. Ind. Bat. 2 (1759) 950.

COLEUS sp.?

Marrubium album semisilvestre Rumph. Herb. Amb. 5: 294.

This form was briefly described by Rumphius, who compared it with *Marrubium album amboinense*=Coleus amboinicus Lour. It may represent a species of Coleus, as suggested by Hasskarl, but its exact status is indeterminable from data now available.

OCIMUM Linnaeus

OCIMUM BASILICUM Linn. Sp. Pl. (1753) 597.

Basilicum indicum hortense Rumph. Herb. Amb. 5: 263 t. 92, f. 1.

Rumphius's figure is a fairly good representation of *Ocimum basilicum* Linn. The reduction to this species seems first to have been made by Burman f., Fl. Ind. (1768) 129, in which he was followed by Lamarck and by Loureiro. Henschel placed it under *Ocimum sanctum* Linn., while Hasskarl placed it under *Ocimum basilicum* Linn. var. *pilosum* Benth. Hasskarl, Neue

Schlüssel (1866) 118, 119, disposes of the three forms described by Rumphius as follows: fuscum=Ocimum sanctum Linn.?; album=O. basilicum Linn. var. album Benth. and var. pilosum Benth.; nigrum=O. basilicum Linn. var. purpurascens Benth. With no material from Amboina for study, no modifications of these reductions, which may or may not be correct, can be suggested.

OCIMUM SANCTUM Linn. Mant. 1 (1767) 85.

Basilicum agreste Rumph. Herb. Amb. 5: 265, t. 92, f. 2.

This species is not represented in our Amboina collections. It was originally reduced by Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1105, to Ocimum gratissimum Linn.; but in the Species Plantarum, ed. 2 (1763) 833, he reduced it to Ocimum tenuiflorum Linn., which may not be specifically distinct from O. sanctum Linn. The plant figured is apparently a form of the common Ocimum sanctum Linn., where it was placed by Don, Dietrich, Walpers, Bentham, and Miquel. The figure is a very poor one.

OCIMUM sp. aff. basilicum Linn.

Ozimum citratum indicum Rumph. Herb. Amb. 5: 266, t. 93, f. 1.

This species is not represented in our Amboina collections. It was originally reduced by Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1105, to Ocimum tenuiflorum Linn.; by Burman f., Fl. Ind. (1768) 129, to Ocimum minimum Linn.; by Loureiro, Fl. Cochinch. (1790) 370, it was discussed under Ocimum africanum Lour.; and by Hasskarl, Neue Schlüssel (1866) 119, it was thought to be Ocimum basilicum Linn., either the var. anisatum Benth. or the var. difforme Benth. I suspect that Hasskarl is correct and that it is a form of Ocimum basilicum Linn.

SOLANACEAE

PHYSALIS Linnaeus

PHYSALIS ANGULATA Linn. Sp. Pl. (1753) 183.

Halicacabus indicus I major s. albus Rumph. Herb. Amb. 6: 60.

Amboina, near the town of Amboina, Robinson Pl. Rumph. Amb. 282, August 8, 1913, in ditches.

The specimen appears to be typical *Physalis angulata* Linn. and agrees well with Rumphius's description. The reduction of the Rumphian plant is in agreement with Nees, Henschel, Walpers, Hasskarl, and Dunal, as cited by Hasskarl, Neue Schlüssel (1866) 163. The figure, t. 26, f. 1, given by Rumphius

as representing the second form, minor s. niger, distinctly resembles this plant.

PHYSALIS MINIMA Linn. Sp. Pl. (1753) 183?

Halicacabus indicus II minor s. niger Rumph. Herb. Amb. 6: 61, t. 26, f. 1.

The description seems to apply to *Physalis minima* Linn., at least as that species is now understood. It was reduced to *Physalis pubescens* Linn., an American species, by Linnaeus, in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 933, which is certainly incorrect. By Loureiro, Fl. Cochinch. (1790) 133, it was placed under *Physalis alkekengi* Linn., but Loureiro's description apparently applies to *Physalis minima* Linn.; at any rate, the Rumphian plant has nothing to do with *Physalis alkekengi* Linn. Authors generally have considered it as representing *Physalis indica* Lam., which is apparently a synonym of *P. minima* Linn.

CAPSICUM Linnaeus

CAPSICUM FRUTESCENS Linn. Sp. Pl. (1753) 189.

Capsicum indicum Rumph. Herb. Amb. 5: 247, t. 88, f. 1-4.

AMBOINA, Way tommo, Robinson Pl. Rumph. Amb. 283, August 16, 1913, locally known as chili and representing Capsicum II minus rubrum Rumph. t.~88,~f.~2.

Four forms of this common Capsicum are figured by Rumphius, which Hasskarl, Neue Schlüssel (1866) 116, 117, refers to various described varieties of this widely distributed and variable species. The reduction was first made by Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, who included all the figures given by Rumphius, but later, Sp. Pl. ed. 2 (1762) 271, definitely excluded fig. 2. Irish, Rept. Mo. Bot. Gard. 9 (1908) 99, places Capsicum indicum II minus rubrum Rumph. Herb. Amb. 5: 247, t. 88 f. 2, under Capsicum frutescens Linn. var. baccatum (Linn.) Irish, which is probably its correct disposition, if it be considered worth while to attempt the distinction of varieties in this polymorphous species.

SOLANUM Linnaeus

SOLANUM MELONGENA Linn. Sp. Pl. (1753) 186.

Trongum hortense Rumph. Herb. Amb. 5: 238, t. 85.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 288, July 26, 1913, locally known as trong; Way tommo, Robinson Pl. Rumph. Amb. 287, August 16, 1913, representing Trongum hortense album amboinense Rumph. Herb. Amb. 5: 238.

Several forms of this commonly cultivated plant are described by Rumphius, notably I fuscum, the variety with purplish fruits, and II album, the variety with pale or nearly white fruits. All are certainly referable to Solanum melongena Linn. The reduction was first made by Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Sp. Pl. ed. 2 (1762) 266, which has been very generally followed by later authors. Some, however, for example, Murray, Syst. (1774) 188, Lamarck, Willdenow, and others, referred it to Solanum insanum Linn., which is apparently merely a form of Solanum melongena Linn. Other synonyms to which the Rumphian figure has been referred are Solanum melongena Linn. var. esculentum Walp. Repert. 3 (1844) 81 and S. esculentum Dunal Hist. Solan. (1813) 208, t. 3.

The form described by Rumphius under Trongum hortense II album as "tamatte," page 238, to which Hasskarl, Neue Schlüssel (1866) 115, refers t. 88, f. A (apparently a typographical error for t. 85, f. A), was thought by Hasskarl to represent Solanum aethiopicum Lour. or its variety violaceum Dunal. It is probably merely a small-fruited form of Solanum melongena Linn.

SOLANUM TRONGUM Poir. in Lam. Encycl. 4 (1797) 308 (type!).

Solanum trongum Poir. var. rumphii Dunal in DC. Prodr. 13 ¹ (1852) 361 (type!).

Trongum agreste spinosum Rumph. Herb. Amb. 5: 240, t. 86, f. 1. Amboina, Binting, Robinson Pl. Rumph. Amb. 285, September 25, 1913, along roadsides at low altitudes, locally known as trong.

Solanum trongum Poir. was based wholly on the Rumphian reference, and I consider that the specimen cited above represents the plant described and figured by Rumphius. However, I am not prepared to state whether or not the species is a valid one, although it has been very generally recognized as such. It has been referred by some authors to Solanum indicum Linn., while Roxburgh referred the Rumphian figure to Solanum insanum Linn.

SOLANUM ALBUM Lour. Fl. Cochinch. (1790) 129.

Solanum album Lour. var. rumphii Dunal in DC. Prodr. 13¹ (1852) 361.

Solanum pressum Dunal Hist. Solan. (1813) 217 (type!)?

Trongum agreste album Rumph. Herb. Amb. 5: 241.

Trongum agreste rubrum Rumph. Herb. Amb. 5: 241, t. 86, f. 2?

AMBOINA, Hitoe lama, Robinson Pl. Rumph. Amb. 286, November 1, 1913, in forests on limestone formations, altitude about 150 meters, locally known as trong baduri.

The specimen almost certainly represents Solanum agreste album Rumph., but S. agreste rubrum may be different. I am not prepared to state that it is the actual form described by Loureiro, Fl. Cochinch. (1790) 129, as Solanum album, although he cites the Rumphian name as a synonym. It is, at any rate, the whole basis of Solanum album Lour. var. rumphii Dunal.

Solanum pressum Dunal was based wholly on Trongum agreste rubrum Rumph. Herb. Amb. 5: 241, t. 86, f. 2, and must be interpreted from the Rumphian figure and description. It may prove to be specifically distinct from the form I have here placed under Solanum album Lour., but no botanical material is available to assist in determining this point.

SOLANUM NIGRUM Linn. Sp. Pl. (1753) 186.

Solanum triangulare Lam. Encycl. 4 (1789) 290. Solanum rumphii Dunal Hist. Sol. (1813) 157 (type). Solanum nigrum Linn. var. rumphii Miq. Fl. Ind. Bat. 2 (1857) 636. Halicacabus baccifer Rumph. Herb. Amb. 6: 62, t. 26, f. 2.

This common and widely distributed species is not represented in our Amboina collections. *Halicacabus baccifer* was cited by Lamarck in the original description of *Solanum triangulare*, but is not the actual type. It seems, however, to be the whole basis of *Solanum rumphii* Dunal. The Rumphian figure was first reduced to *Solanum nigrum* Linn. by Linnaeus, in Stickman Herb. Amb. (1754) 26, Amoen. Acad. 4 (1759) 134, and this is certainly the correct disposition of it.

SOLANUM VERBASCIFOLIUM Linn. Sp. Pl. (1753) 184.

Adulterina Rumph. Herb. Amb. 6: 58, t. 25, f. 1.

Amboina, Waë, Robinson Pl. Rumph. Amb. 289, November 26, 1913.

The figure cited by Linnaeus, in Stickman Herb. Amb. (1754) 26, quoted by Hasskarl, Neue Schlüssel (1866) 162, is not that of Adulterina, but of Lappago laciniata; that is, t. 25, f. 2, which is Urena lobata Linn. (p. 357) and Triumfetta bartramia Linn. (p. 354). The reference by Loureiro, Fl. Cochinch. (1790) 229, under Lawsonia falcata Lour. is apparently a pure error, for the plant Loureiro describes is totally different from the one that Rumphius figures. It was reduced by Hamilton in Wight and Arnott, Prodr. (1834) 307, to Solanum verbascifolium Linn. and is S. verbascifolium Linn. var. adulterinum Ham. in Walp. Repert. 3 (1844) 53. The plant figured by Rumphius appears to be typical Solanum verbascifolium Linn.

LYCOPERSICUM Hill

LYCOPERSICUM ESCULENTUM Mill. Gard. Dict. ed. 8 (1768) no. 2.

Solanum lycopersicum Linn. Sp. Pl. (1753) 185.

Pomum amoris Rumph. Herb. Amb. 5: 416, t. 154, f. 1.

The common tomato, cultivated and wild in most parts of the Malayan region, is not represented in our Amboina collections. The form figured is one of the cultivated types with medium-sized fruits; the form indicated by Rumphius as II rotundum is apparently the small-fruited wild form with fruits 1 to 2 cm in diameter; that is, the common wild form of the plant that occurs in the Malayan region. The reduction of *Pomum amoris* to *Solanum lycopersicum* Linn. was first made by Linnaeus, in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 132, Sp. Pl. ed. 2 (1762) 265, which, as *Lycopersicum esculentum* Mill., is the correct disposition of it.

DATURA Linnaeus

DATURA FASTUOSA Linn. Syst. ed. 10 (1759) 932.

Stramonia indica III dutra rubra Rumph. Herb. Amb. 5: 243, t. 87, f. 2.

No representative of the genus *Datura* occurs in our Amboina collections, but the form figured and described by Rumphius is certainly *Datura fastuosa* Linn. The figure presents a form occasionally found in cultivation in the Malayan region with a double corolla. Both forms figured by Rumphius on plate 87 were erroneously reduced by Linnaeus to *Datura metel* Linn., in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 932, Sp. Pl. ed. 2 (1762) 256, in which he was followed by numerous other authors. Other names involved are *Datura hummatu* Bernh. and *D. fastuosa* var. *rubra* Dunal. Burman f., Fl. Ind. (1768) 53, first made the correct reduction to *Datura fastuosa* Linn.

DATURA FASTUOSA Linn. var. ALBA (Nees) C. B. Clarke in Hook. f. Fl. Brit. Ind. 4 (1883) 243.

Datura alba Nees in Trans. Linn. Soc. 17 (1834) 73.

Datura nigra Hassk. Cat. Hort. Bogor. (1844) 142 (type!).

Stramonia indica Rumph. Herb. Amb. 5: 242, t. 87, f. 1 (incl. Dutra alba et Dutra nigra).

This was originally reduced with *Stramonia indica III* to *Datura metel* Linn. by Linnaeus, as noted above. It is, however, the common, white-flowered form described by Nees as *Datura alba*, which is apparently merely a variant of the common *Datura*

fastuosa Linn. Dutra nigra Rumph., on which Datura nigra Hassk, was wholly based, is manifestly only a form of the common, white-flowered plant with colored branches.

NICOTIANA Linnaeus

NICOTIANA TABACUM Linn, Sp. Pl. (1753) 180.

Tabacus Rumph. Herb. Amb. 5: 225.

Amboina, Hitoe lama, Robinson Pl. Rumph. Amb. 284, October 8, 1913, cultivated, locally known as tabak.

Loureiro, Fl. Cochinch. (1790) 111, referred this to Nicotiana fruticosa Linn., but the commonly cultivated Nicotiana tabacum Linn. was undoubtedly the plant described by Rumphius and is so considered by Miquel, Fl. Ind. Bat. 2 (1857) 670.

SCROPHULARIACEAE

LIMNOPHILA * R. Brown

LIMNOPHILA AROMATICA (Lam.) comb. nov.

Ambulia aromatica Lam. Encycl. 1 (1783) 128. Gratiola aromatica Pers. Syn. 1 (1805) 14. Limnophila punctata Blume Bijdr. (1826) 750. Terebinthina Rumph. Herb. Amb. 6: 150, t. 67, f. 2.

No Limnophila occurs in our Amboina collections, yet Rumphius's figure and description are unmistakably the form described by Blume as Limnophila punctata, but which manifestly is a synonym of the much older Ambulia aromatica Lam. bulia aromatica Lam. was Henschel's reduction of the Rumphian plant and figure, while Hasskarl, Neue Schlüssel (1866) 177, thought that it might be either Limnophila punctata Blume or L. conferta Benth.

LIMNOPHILA RUGOSA (Roth) comb. nov.

Herpestis rugosa Roth Nov. Pl. Sp. (1821) 290. Capraria gratissima Roxb. Fl. Ind. ed. 2, 3 (1832) 92. Stemodia menthastrum Benth. Scroph. Ind. (1835) 23. Limnophila roxburghii G. Don Gen. Syst. 4 (1838) 543. Menthastrum amboinicum Rumph. Herb. Amb. 6: 151, t. 68, f. 1.

The Rumphian figure is very characteristic and, unquestionably, is referable to the present species. Henschel erred in referring it to Nepeta malabarica Linn.=Anisomeles. Hasskarl, Neue Schlüssel (1866) 177, considered that it was Limnophila balsamea Benth.

^{*} Retained name, Vienna Code; Ambulia Lam. (1783), Diceros Lour. (1790), and Hydropiton Gaertn. (1805) are older.

ADENOSMA R. Brown

ADENOSMA CAPITATUM Benth. ex Hook. f. Fl. Brit. Ind. 4 (1884) 264.

Stemodia capitata Benth. in Wall. Cat. (1831) no. 3926, nomen nudum, Bot. Reg. sub. t. 1470, fide C. B. Clarke.

Pterostigma capitatum Benth. Scroph. Ind. (1835) 21.

Erinus bilabiatus Roxb. Fl. Ind. ed. 2, 3 (1832) 92.

Stoechas pilosa Rumph. Herb. Amb. 7: 51, t. 22, f. 1.

This species is not represented in our Amboina collections. The figure and description, however, both refer unmistakably to *Adenosma capitatum* Benth. Hasskarl, Neue Schlüssel (1866) 190, referred it, with doubt, to *Acrocephalus capitatus* Benth., which is manifestly wrong. The whole plant is pleasantly aromatic when crushed. Clarke states that *Erinus bilabiatus* Roxb. and *Stemodia capitata* Benth. were published in the same year.

ILYSANTHES Rafinesque

(Bonnaya Reichenbach)

ILYSANTHES ANTIPODA (Linn.) comb. nov.

Ruellia antipoda Linn. Sp. Pl. (1753) 635.

Ruellia anagallis Burm. f. Fl. Ind. (1768) 135.

Gratiola veronicaefolia Retz. Obs. 4 (1786) 8.

Bonnaya veronicaefolia Spreng. Syst. 1 (1825) 41.

Ilysanthes veronicaefolia Urban Berich. Deutsch. Bot. Gesellsch. 2 (1884) 436.

Crusta ollae major Rumph. Herb. Amb. 5: 460, t. 170, f. 2.

AMBOINA, near the town of Amboina, Robinson Pl. Rumph. Amb. 261, August 20, 1913, in a sago swamp near sea level.

Ruellia antipoda Linn., typified by Fl. Zeyl. 235, supplies the oldest specific name for this common, well-known, and widely distributed species. The reduction to Ruellia antipoda Linn. was first made by Linnaeus, in Stickman Herb. Amb. (1754) 24, in which he was followed by Willdenow, Loureiro, Poiret, and other authors. Burman f., Fl. Ind. (1768) 135, referred it to his Ruellia anagallis, while various other authors have cited it under one or another of the synonyms mentioned above. The species appears in most recent botanical literature as Bonnaya veronicae-folia Spreng.

CURANGA Jussieu

CURANGA FEL-TERRAE (Lour.) comb. nov.

Picria fel-terrae Lour. Fl. Cochinch. (1790) 393.

Caranga amara Vahl Enum. 1 (1804) 100.

Curanga amara Juss. in Ann. Mus. Paris 9 (1807) 319.

Curania amara R. & S. Syst. 1 (1817) 138.

Gratiola amara Roxb. Hort. Beng. (1814) 80, nomen nudum, Fl. Ind. ed. 2, 1 (1832) 135.

Herpestis amara Benth. Scroph. Ind. (1835) 30. Serratula amara Rumph. Herb. Amb. 5: 459, t. 170, f. 1.

AMBOINA, Kati-kati, Robinson Pl. Rumph. Amb. 263, October 17, 1913, in wet meadows and in cleared places near streams, altitude about 70 meters, locally known as kakuran mera.

Serratula amara was erroneously reduced by Linnaeus to Scutellaria indica Linn., in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 133, Sp. Pl. ed. 2 (1763) 836, in which he was followed by Burman f., Willdenow, Poiret, Persoon, and Pritzel. Vahl, however, placed it under his Caranga amara, Enum. 1 (1804) 100, given by all authors since Jussieu as Curanga amara Juss. Various authors have cited the figure under the other synonyms given above. I can see no reason for not accepting Loureiro's specific name, for Picria fel-terrae Lour. is manifestly the same as Curanga amara Juss., and Loureiro's specific name is at least fourteen years older than that proposed by Vahl. It is also to be noted that the generic names Picria and Caranga are both older than Curanga of Jussieu.

LINDERNIA Allioni

(Vandellia Linnaeus)

LINDERNIA CRUSTACEA (Linn.) F. Muell. Census (1882) 97.

Capraria crustacea Linn. Mant. 1 (1767) 87.

Vandellia crustacea Benth. Scroph. Ind. (1835) 35.

Crusta ollae minor Rumph. Herb. Amb. 5: 461, t. 170, f. 3.

Amboina, Batoe mera, Robinson Pl. Rumph. Amb. 262, July 20, 1913, in various habitats, altitude 5 to 15 meters.

In Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 133, Linnaeus reduced "170 Crusta ollae" to his Ruellia antipoda, overlooking the fact that two distinct species are described and figured. Of these Crusta ollae major, t. 170, f. 2, is Ruellia antipoda Linn.=Ilysanthes antipoda (Linn.) Merr. (see p. 467); while Crusta ollae minor, t. 170, f. 3, is Capraria crustacea Linn. =Lindernia crustacea (Linn.) F. Muell. Burman f., Fl. Ind. (1768) 134, refers Crusta ollae minor, t. 170, f. 3, to Ruellia antipoda Linn., but also on the preceding page refers the same figure to Capraria crustacea Linn. where it properly belongs. names concerned in the reduction of the Rumphian figure are Gratiola lucida Willd., Torenia crustacea Cham. & Schlecht., and T. edentula Griff. The plant figured and described by Rumphius is manifestly the common, well-known, and widely distributed Lindernia (Vandellia) crustacea (Linn.) F. Muell., which appears in most recent botanical literature as Vandellia crustacea Benth.

BIGNONIACEAE

DOLICHANDRONE Fenzl

DOLICHANDRONE SPATHACEA (Linn. f.) K. Schum. Fl. Kaiser Wilhelms Land (1889) 123.

Bignonia spathacea Linn. f. Suppl. (1781) 283.

Dolichandrone rheedii Seem. in Journ. Bot. 8 (1870) 380.

Lignum equinum Rumph. Herb. Amb. 3: 73, t. 46.

AMBOINA, Kati-kati, Robinson Pl. Rumph. 86, October 17, 1913, along the seashore.

Lignum equinum was originally reduced to Bignonia spathacea by the younger Linnaeus in the original description of the species. The first reference is to Rumphius, but the actual type was material collected by Koenig. Loureiro, Fl. Cochinch. (1790) 380, referred it to his Bignonia longissima, but B. longissima Lour. is an exact synonym of Dolichandrone spathacea K. Schum.

PANDOREA Spach

PANDOREA sp.?

Campana rubra Rumph. Herb. Amb. 7: 42.

Hasskarl, Neue Schlüssel (1866) 190, has suggested that Campana rubra is a bignoniaceous plant and gives a description comprising the essential characters of the plant after Rumphius. I consider that he is correct in his surmise as to the family, and I further suggest Pandorea as the possible correct disposition of the Rumphian plant. At any rate, the species described by Rumphius should be critically compared with authentic botanical material of the species described as Tecoma amboinensis Blume and T. dendrophila Blume, the former from Amboina, the latter from New Guinea, both of which are apparently referable to Pandorea.

PEDALIACEAE

SESAMUM Linnaeus

SESAMUM ORIENTALE Linn. Sp. Pl. (1753) 634.

Sesamum indicum Linn. Sp. Pl. (1753) 634.

Sesamum indicum nigrum Rumph. Herb. Amb. 5: 204, t. 76, f. 1.

Sesamum indicum album Rumph. Herb. Amb. 5: 204.

The common sesame is not represented in our Amboina collections, but it doubtless still occurs in Amboina, as it is a plant of wide distribution in cultivation and in cultivated lands in the Indo-Malayan region. Rumphius's illustration was first reduced to Sesamum indicum Linn. by Linnaeus, in Stickman Herb. Amb. (1754) 20, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1120, Sp. Pl. ed. 2 (1763) 884. Sesamum orientale Linn. has page priority over the more commonly used Sesamum indicum Linn.

GESNERIACEAE

CYRTANDRA Forster

CYRTANDRA DECURRENS DeVriese Pl. Ind. Bat. Or. (1845) 14.

Macuerus femina Rumph. Herb. Amb. 6: 132, t. 58, f. 1.

AMBOINA, Halong, Batoe merah, Soja, and Lateri, Robinson Pl. Rumph. Amb. 210, September, 1913, along river banks, in thin forests, and on wooded hillsides, altitude 20 to 300 meters.

Hasskarl, Neue Schlüssel (1866) 174, thought that this might be Cyrtandra nemorosa Blume, a species known only from Java. The Amboina specimens agree perfectly with the Rumphian figure and description and with the description of Cyrtandra decurrens DeVriese, which was based on Amboina material. Clarke, DC. Monog. Phan. 5 (1883) 232, cites Amboina material collected by DeVriese, Zippel, Barclay, C. Smith, Dolleschal, and Lahaie; and Doctor Robinson collected it in four different localities, so the species is apparently common in Amboina. The typical form is also known from Buru, with varieties in Penang, Borneo, Celebes, and New Guinea.

ACANTHACEAE

HEMIGRAPHIS Nees

HEMIGRAPHIS ANGUSTIFOLIA Hallier f. in Nov. Act. Akad. Naturf. 70 (1897) 203, t. 10, f. 3.

Prunella molucca hortensis angustifolia Rumph. Herb. Amb. 6: 30, t. 13, f. A, B.

AMBOINA, Robinson Pl. Rumph. Amb. 99, August 20, 1913, in a sago swamp near the town of Amboina, locally known as biana.

Linnaeus referred "Prunella molucca Rumph. amb. 6. p. 30. t. 13. f. B." to Ruellia repanda Linn. in the original description of that species, Sp. Pl. ed. 2 (1763) 886, in which he has been followed by all authors, until very recently, some of whom added also fig. 2 of the same plate. The species was based primarily on Javan specimens. Hallier, however, has distinguished the form described and figured by Rumphius as Hemigraphis angustifolia, describing the species from a specimen collected by Treub in Amboina and citing the Rumphian name and illustration as given above. This is undoubtedly the correct disposition of it.

HEMIGRAPHIS PETOLA Hallier f. Nov. Act. Akad. Naturf. 70 (1897) 206, t. 10, f. 1.

Prunella molucca hortensis III lire petola Rumph. Herb. Amb. 6: 31. The reduction follows Hallier's suggestion, his species being

based on specimens from Ceram Island; Rumphius's material was from Ternate. The forms described by Rumphius, l. c., as Lire papua and Lire kitsjil are probably representatives of *Hemigraphis*, at least of the *Acanthaceae*; but their exact status is indeterminable from data and material now available.

HEMIGRAPHIS REPTANS K. Schum. var. GLAUCESCENS Hallier f. in Nov. Act. Akad. Naturf. 70 (1897) 207.

Prunella silvestris alba Rumph. Herb. Amb. 6: 31, t. 13, f. 2.

Amboina, Batoe mera, Robinson Pl. Rumph. Amb. 100, July 20, 1913, in wet soil at low altitudes.

The specimen is apparently referable to the variety described by Hallier, the type of which was from Amboina. It is not so certain that it represents *Prunella silvestris alba* Rumph., but it agrees with the description rather better than with the figure. It was reduced by Burman f., Fl. Ind. (1768) 135, to *Ruellia alternata* Burm. f. (*R. discolor* Nees), a species known only from Java; and by Nees and Miquel it was placed under *Ruellia discolor* Nees=*Hemigraphis alternata* T. And.

HEMIGRAPHIS sp.

Prunella molucca silvestris II rubra Rumph. Herb. Amb. 6: 32, t. 13, f. 3.

This is clearly a species of *Hemigraphis*, but beyond this its exact status is indeterminable at the present time from want of material representing it. Burman f., Fl. Ind. (1768) 135, reduced it to *Ruellia alternata* Burm. f.=*Hemigraphis alternata* T. Andr.; while Nees, in DC. Prodr. 11 (1857) 145, placed it under *Ruellia colorata* Blume=*Hemigraphis colorata* Hallier f.

Prunella molucca silvestris III rotunda Rumph. Herb. Amb. 6: 32 is certainly a species of *Hemigraphis*, apparently close to the preceding, but its status cannot be definitely determined at present.

HEMIGRAPHIS sp.

Prunella molucca hortensis latifolia Rumph. Herb. Amb. 6: 30, t. 18, f. 1.

Hasskarl, Neue Schlüssel (1866) 157, thought that this might be a species of *Strobilanthes* or *Lepidagathis*. The figure is unmistakably that of a species of *Hemigraphis*, but the plant is not represented in our Amboina collections and cannot be properly placed within the genus until more extensive collections of Amboina material are available for study.

RUELLIA Plumier

RUELLIA REPENS Linn. Mant. 1 (1767) 89; Burm. f. Fl. Ind. (1768) 135, t. 41, f. 2.

Dipteracanthus lanceolatus Nees in Wall. Pl. As. Rar. 3 (1832) 82. Justicia moretiana Burm. f. Fl. Ind. (1768) 10 p. p., quoad syn. Rumph.

Moretiana Rumph. Herb. Amb. 6: 53, t. 23, f. 1.

Amboina, Batoe merah, Robinson Pl. Rumph. Amb. 101, July 20, 1913, in rocky soil and along ditches at low altitudes; also represented by Rel. Robins. 2500 from Baoebaoe, Boeton, July 13, 1913.

The specimen cited above certainly represents *Moretiana* as described and figured by Rumphius and is likewise *Ruellia repens* Linn., as currently interpreted. C. B. Clarke * states regarding *Ruellia repens* Linn. Mant. 1 (1767) 89:

The plate of Burmann (Fl. Ind. t. 41, fig. 1) is good, and represents a plant not of the genus Ruellia. In the Addit. to Mant. 515 (1771), Linnaeus says his Ruellia repens was Burmann, t. 41, fig. 1.

I consider that the figure given by Burman f. is a crude representation of Ruellia repens Linn. as currently interpreted; but at any rate it has no bearing on the interpretation of Ruellia repens Linn., which was published one year before Burman's work was issued. Burman f., Fl. Ind. (1768) 10, referred Moretiana Rumph. to Justicia moretiana Burm. f., taking his specific name from Rumphius. This species was based primarily on Burman Thes. Zeyl. 7, t. 3, f. 1, an entirely different plant, which has little in common with Moretiana as figured and described by Rumphius.†

BARLERIA Linnaeus

BARLERIA PRIONITIS Linn. Sp. Pl. (1753) 636.

Barleria hystrix Linn. Mant. 1 (1767) 89. Prionitis hystrix Miq. Fl. Ind. Bat. 2 (1858) 809. Hystrix frutex Rumph. Herb. Amb. 7: 22, t. 13.

This common and well-known species is not represented in our Amboina collections. The reduction of *Hystrix frutex* Rumph. to *Barleria prionitis* Linn. was first made by Linnaeus, in Amoen. Acad. 4 (1759) 136, Syst. ed. 10 (1759) 1121, Sp. Pl. ed. 2 (1763) 887. *Barleria hystrix* Linn. is a synonym of *B. prionitis* Linn. and was based primarily on a specimen collected by Royen, with a reference to *Hystrix frutex* Rumph. and one to Plukenet added.

^{*} Journ. As. Soc. Beng. 74 2 (1907) Extra Number 649.

[†] See Trimen Fl. Ceyl. 3 (1895) 335.

LEPIDAGATHIS Willdenow

LEPIDAGATHIS RUMPHII sp. nov.

Bungum mas Rumph. Herb. Amb. 6: 52, t. 22, f. 2.

AMBOINA, Way tommo and near the town of Amboina, Robinson Pl. Rumph. Amb. 97 (type), July and August, 1913, along river banks and in thickets, altitude 5 to 50 meters.

Erecta vel suberecta, circiter 50 cm alta, ramosa, inflorescentiis exceptis glabra vel subglabra, ramis ramulisque quadrangulatis; foliis longe petiolatis, chartaceis, oblongis ad oblongo-lanceolatis, aequilateralibus, usque ad 7 cm longis, utrinque subaequaliter angustatis acuminatisque, nervis utrinque circiter 5, tenuibus; inflorescentiis terminalibus, spicis numerosis, anguste oblongis, 1.5 ad 2.5 cm longis, aggregatis, bracteis bracteolisque subaequimagnis, oblongo-ovatis, 4 mm longis, breviter mucronato-acuminatis, extus pubescentibus, eglandulosis; calycis 5-partitis, 5 mm longis, pubescentibus.

An erect or suberect, branched, nearly glabrous herb about 50 cm high, the branches and branchlets prominently 4-angled. Leaves opposite, those of each pair subequal in size, oblong to oblong-lanceolate, chartaceous, olivaceous, dull, paler beneath, 4 to 7 cm long, 1.5 to 2.5 cm wide, the upper ones smaller, subequally narrowed to the acuminate base and apex, equilateral, entire, the cystoliths small, numerous on both surfaces; petioles slender, 1.2 to 2.5 cm long. Spikes terminal, numerous, mostly in threes on each ultimate branchlet, cylindric, continuous, 1.5 to 2.5 cm long, about 6 mm in diameter, pale when dry, pubescent. many-flowered, secund. Bracts and bracteoles similar in size and shape, oblong-ovate, apiculate-acuminate, about 4 mm long, uniformly pubescent with rather long pale hairs, the indumentum on the calvx quite similar. Calvx about 5 mm long, the upper segment 2 mm wide, the two lateral ones nearly free, less than one-half as wide as the upper one, the lower segment cleft about one-third. Corolla 5 mm long. Capsule narrowly oblong, narrowed upward, obtuse, about 5 mm long.

This species is manifestly in the group with *Lepidagathis mucronata* Nees, *L. parviflora* Blume, and *L. javanica* Blume, but is apparently distinct from all of these and from the other allied species. It is well characterized by its oblong to oblonglanceolate, relatively long-petioled leaves; its equal bracts and bracteoles; its short, dense, somewhat crowded spikes; and its small flowers.

The species manifestly represents *Bungum mas* as figured and described by Rumphius, a form that previously has not been

correctly placed, even as to its genus. In the early literature Bungum mas was confused with Justicia purpurea Linn. and with Justicia bivalvis Linn. (see Peristrophe bivalvis (Linn.) Merr., page 476). It has also been referred by various authors to Hypoestes purpurea R. Br., to Rostellularia purpurea R. Br., and to R. diffusa Nees, with none of which it has much in common.

ACANTHUS Linnaeus

ACANTHUS EBRACTEATUS Vahl Symb. 2 (1791) 75, t. 40; 3 (1794) 85.

Dilivaria ebracteata Pers. Syn. 2 (1807) 179.

Aquifolium indicum I mas Rumph. Herb. Amb. 6: 163, t. 71, f. 1.

Amboina, Paso, Robinson Pl. Rumph. Amb. 106, October 29, 1913, in mangrove swamps, flowers white, with a faint tinge of violet.

Both forms of Aquifolium indicum Rumph. were reduced by Linnaeus to Acanthus ilicifolius Linn., in Stickman Herb. Amb. (1754) 28, Amoen. Acad. 4 (1759) 136, Syst. ed. 10 (1759) 1123, Sp. Pl. ed. 2 (1763) 892, in which he was followed by Burman f. and by Loureiro. However, two species are described and figured; I mas, clearly the form characterized by Vahl as Acanthus ebracteatus, and II femina, equally clearly the form characterized by Wallich as Acanthus volubilis (see the following species). The Rumphian figure and description were referred by Vahl, Symb. 3 (1794) 85, to Acanthus ebracteatus Vahl, in which he was followed by Willdenow. Poiret, Henschel, Dietrich, Nees, Pritzel, and Miquel cite it under Dilivaria ebracteata Pers., but in the more modern literature it is cited under Acanthus ebracteatus Vahl.

ACANTHUS VOLUBILIS Wall. Pl. As. Rar. 2 (1832) 56, t. 172.

Dilivaria volubilis Nees in Wall. Pl. As. Rar. 3 (1833) 98.

Dilivaria scandens Nees in DC. Prodr. 11 (1857) 269.

Aquifolium indicum II femina Rumph. Herb. Amb. 6: 163, t. 71, f. 2. AMBOINA, Ayer putri, Robinson Pl. Rumph. Amb. 107, July 28, 1913, along tidal streams, subscandent.

As noted above under *Acanthus ebracteatus* Vahl, Linnaeus originally reduced this form to *Acanthus ilicifolius* Linn. Nees and Miquel cite it under *Dilivaria scandens* Nees; which, as *Acanthus volubilis* Wall., is certainly the correct disposition of it.

GRAPTOPHYLLUM Nees

GRAPTOPHYLLUM PICTUM (Linn.) Griff. Notul. 4 (1854) 139.

Justicia picta Linn. Sp. Pl. ed. 2 (1762) 21.

Graptophyllum hortense Nees in Wall. Pl. As. Rar. 3 (1832) 102.

Folium bracteatum Rumph. Herb. Amb. 4: 73, t. 30 (incl. vulgare, rubrum, et igneum Rumph. 1. c. 73, 74).

Amboina, Hitoe lama, Robinson Pl. Rumph. Amb 108, November 1, 1913, from cultivated plants, altitude about 175 meters, locally known as telaga.

Folium bracteatum is cited by Linnaeus as a synonym of Justicia picta Linn. in its original place of publication; which, as Graptophyllum pictum Griff., is certainly the correct disposition of it. Hasskarl, Neue Schlüssel (1866) 78, has referred the several color forms, vulgare, rubrum, and igneum, to the varieties album Hassk., rubrum Hassk., and igneum Hassk., respectively.

PSEUDERANTHEMUM Radlkofer

PSEUDERANTHEMUM PULCHELLUM (Hort.) Merr. in Philip. Journ. Sci. 7 (1912) Bot. 248.

Eranthemum pulchellum Hort. Gartenmag. (1810) 176, t. 17.

Eranthemum bicolor Schrank Hort. Monac. (1819) t. 8.

Pseuderanthemum bicolor Radlk. ex Lindau in Engl. & Prantl Nat. Pflanzenfam. 4 sb (1895) 330.

Bungum femina Rumph. Herb. Amb. 6: 52, t. 21, f. 2.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 96, August 30, 1913, at low altitudes, locally known as bunga burong.

The specimen cited above agrees closely with Rumphius's description and figure and certainly represents Bungum femina Rumph. It is also unmistakably the form commonly known as Eranthemum bicolor Schrank or Pseuderanthemum bicolor Radlk., for which Pseuderanthemum pulchellum (Hort.) Merr. is an older name. The Rumphian species has not been previously determined in connection with modern taxonomy. Hasskarl, Neue Schlüssel (1866) 161, suggested that Bungum femina might be Dipteracanthus ventricosus Nees or D. patulus Nees.

PSEUDERANTHEMUM CURTATUM (C. B. Clarke) comb. nov.

Eranthemum curtatum C. B. Clarke in Govt. Lab. Publ. (Philip.) 35 (1905) 89.

Ophiocolla altera Rumph. Herb. Amb. 6: 34.

AMBOINA, Lateri and Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 94, August and September, 1913, in forests, altitude not indicated.

Hasskarl, Neue Schlüssel (1866) 157, thought that possibly Ophiocolla altera Rumph. might be referable to Justicia ecbolium Linn., but this suggested reduction is certainly wrong. The specimen cited above agrees fully with Rumphius's description and with our very large series of Eranthemum curtatum C. B. Clarke, a species of wide distribution in the Philippines, this species in turn being allied to Eranthemum malaccense C. B. Clarke and E. crenulatum Nees; all of these species must be referred to Pseuderanthemum.

PSEUDERANTHEMUM RACEMOSUM (Roxb.) Radlk. ex Lindau in Engl. & Prantl Nat. Pflanzenfam. 4 *b* (1895) 330.

Eranthemum racemosum Roxb. Hort. Beng. (1814) 3, nomen nudum, Fl. Ind. ed. 2, 1 (1832) 113.

Olus caprinum Rumph. Herb. Amb. 6: 54.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 95, August 30, 1913, along roadsides at low altitudes, flowers pale purplish.

No previous identification of *Olus caprinum* Rumph. has been suggested, other than Hasskarl's reference of it to the *Acanthaceae*. The specimen cited above agrees very closely with Rumphius's description and even better with that of Roxburgh. The type of *Eranthemum racemosum* Roxb. was from the Moluccas.

PERISTROPHE Nees

PERISTROPHE BIVALVIS (Linn.) comb. nov.

Justicia bivalvis Linn. Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 850 (type!).

Justicia tinctoria Roxb. Fl. Ind. 1 (1820) 124.

Peristrophe tinctoria Nees in Wall. Pl. As. Rar. 3 (1832) 113.

Folium tinctorium Rumph. Herb. Amb. 6: 51, t. 22, f. 1.

Amboina, Soja and Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 98, August, 1913, in light woods, altitude 200 to 400 meters.

The synonymy of this species is especially complicated, but Justicia bivalvis Linn, as originally published, not as currently interpreted in modern botanical literature, is clearly based wholly on Folium tinctorium Rumph, and nothing else. In Stickman's Herb. Amb. (1754) 26, Linnaeus erroneously referred it to Jussiaea [sic!] purpurea Linn., a manifest error for Justicia purpurea Linn., this species having been based on specimens collected by Osbeck in China. In Amoen, Acad. 4 (1759) 134 it appears thus: "22 Folium tinctorium=Justicia bivalvis," clearly indicating from the cited name, Folium tinctorium, that t. 22, f. 1, was indicated. However, in the same year, Linnaeus published Justicia bivalvis with a short description, Syst. ed. 10 (1759) 850, with an erroneous reference to "Rumph. VI. t. 29," which is a fern, Athyrium esculentum Copel; the description unmistakably applies to Folium tinctorium Rumph. from which it was apparently taken. In the same place Linnaeus erroneously referred t. 22, f. 1 (Folium tinctorium), to Justicia purpurea Linn., following his first treatment of it in Stickman's Herbarium Amboinense. Again, Sp. Pl. ed. 2 (1762) 23, Linnaeus referred to Justicia purpurea the Rumphian Folium tinctorium Herb. Amb. 6: 51, t. 22, f. 1, and on the same page he referred to Justicia bivalvis the Rumphian Bungum Herb. Amb.

6:55, t. 22, f. 1 [f. 2 intended], Bungum being a species of Lepidagathis (see p. 473). Burman f., Lamarck, Loureiro, and Poiret followed Linnaeus and apparently interpreted Justicia purpurea Linn. from Folium tinctorium Rumph., citing the Rumphian name and figure as a synonym. Vahl, Murray, Willdenow, Poiret, Roemer and Schultes, and Roxburgh cite the Rumphian name and figure under Justicia bivalvis Linn., which, as Peristrophe bivalvis (Linn.) Merr., is certainly the correct disposition of it. More recent authors cite Folium tinctorium Rumph. under Peristrophe tinctoria Nees, a synonym of P. bivalvis (Linn.) Merr.

Justicia purpurea Linn. was described from specimens collected by Osbeck in the vicinity of Canton, China, and has not been definitely placed, although a simple examination of the specimen in the Linnean herbarium should settle its status; it is probably a species of Rostellularia. Justicia bivalvis Linn. has been misinterpreted by modern authors. It is described as Dicliptera bivalvis Juss., a species that has nothing to do with the Linnean species as originally published. Additional synonyms of Peristrophe bivalvis Merr. are Sautiera tinctorium Span. and Justicia roxburgiana R. & S.

Hasskarl, Neue Schlüssel (1866) 161, refers Folium tinctorium I to Peristrophe tinctoria Nees var. concolor Hassk. and Folium tinctorium II to Peristrophe tinctoria Nees var. rubrinervis Hassk., but the two are manifestly merely color variants of a single species.

RHINACANTHUS Nees

RHINACANTHUS NASUTA (Linn.) Kurz in Journ. As. Soc. Beng. 39² (1870) 79.

Justicia nasuta Linn. Sp. Pl. (1753) 16.

Rhinacanthus communis Nees in Wall. Pl. As. Rar. 3 (1832) 109.

Gendarussa femina Rumph. Herb. Amb. 4: 72, t. 29.

Amboina, near the town of Amboina, Robinson Pl. Rumph. Amb. 105, September 13, 1913, in hedge rows.

Linnaeus referred this to Justicia nasuta Linn., in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 126; which, as Rhinacanthus nasuta (Linn.) Kurz, I consider to be the correct disposition of Gendarussa femina Rumph. In the Systema ed. 10 (1759) 850, Linnaeus erroneously refers "Rumph. amb. IV. t. 17,"=Lawsonia inermis Linn., to Justicia nasuta; and at the same time he refers "Rumph. VI. t. 29" to Justicia bivalvis. Justicia bivalvis Linn. is Peristrophe tinctoria Nees=Peristrophe bivalvis (Linn.) Merr., while "Rumph. VI. t. 29" is Rhinacanthus

nasuta (Linn.) Kurz. Other authors, however, have referred it to Justicia gendarussa Burm. f., which is represented by Gendarussa Rumph. Herb. Amb. 4: 70, t. 28 (see below). The form described as Gendarussa femina II from Bali is indeterminable from the data at present available and may not even belong to the Acanthaceae.

JUSTICIA Linnaeus

JUSTICIA GENDARUSSA Burm. f. Fl. Ind. (1768) 10.

Justicia gendarussa Linn. f. Suppl. (1781) 85.

Gendarussa vulgaris Nees in Wall. Pl. As. Rar. 3 (1832) 104.

Gendarussa Rumph. Herb. Amb. 4: 70, t. 28 (incl. vulgaris alba, vulgaris nigra, and vulgaris fusca Rumph. 70, 71).

Amboina, Paso, Robinson Pl. Rumph. Amb. 104, October 31, 1913, near the seashore, locally known as gandarussa mera; Hitoe messen, in light forests, Robinson Pl. Rumph. Amb. 103, November 5, 1913, altitude about 100 meters, locally known as gandarussa puti.

Gendarussa Rumph. was reduced by Burman f. to Justicia gendarussa Burm. f., in the original description of the species, which was primarily based on actual specimens in Burman's hands. The species is Burman's and was not originally described by Linnaeus as credited in most modern publications. Most authors have followed Burman in citing Rumphius's Gendarussa under Justicia gendarussa Burm. f., but a few have followed Nees and have cited it under Gendarussa vulgaris Nees, a synonym of Justicia gendarussa Burm. f. The forms described by Rumphius are hardly worthy of note, although Hasskarl referred the first to the variety viridis Hassk. and the second to the variety nigra Hassk.

RUBIACEAE *

DENTELLA Forster

DENTELLA REPENS (Linn.) Forst. Char. Gen. (1776) 26, t. 13.

Oldenlandia repens Linn. Mant. 1 (1767) 40.

Crusta ollae III angustifolia Rumph. Herb. Amb. 5: 461, t. 170, f. 4.

This common and widely distributed herb is not represented in our Amboina collections. The Rumphian figure and description, however, unmistakably apply to *Dentella repens* Forst. The reduction to *Dentella repens* was first made by Loureiro, Fl. Cochinch. (1790) 78 (*Oldenlandia repens* Linn.). All authors, since Willdenow, who have had occasion to cite the Rumphian

^{*}I am indebted to Dr. Th. Valeton for assistance in identifying our Amboina Rubiaceae, and for critical notes regarding Rumphian species of this family.

illustration, have placed it where it manifestly belongs, under *Dentella repens* Forst.

HEDYOTIS Linnaeus

HEDYOTIS VERTICILLATA (Linn.) Lam. Ill. 1 (1791) 271.

Oldenlandia verticillata Linn. Mant. 1 (1767) 40.

Hedyotis hispida Retz. Obs. 4 (1786) 23.

Spermacoce articularis Linn. f. Suppl. (1781) 119.

Hedyotis crateogonum Spreng. Pl. Min. Cog. Pugillus 2 (1815) 35.

Crateogonum amboinicum II majus Rumph. Herb. Amb. 6: 25, t. 10.

Amboina, Batoe mera, Robinson Pl. Rumph. Amb. 158, July 20, 1913, on coral rocks, altitude 5 meters.

Oldenlandia verticillata Linn. was based primarily on specimens cultivated in the botanic garden at Upsala, with an additional reference to Crateogonum amboinicum Rumph. The description applies in all particulars to the widely distributed plant commonly known as Hedyotis hispida Retz. Spermacoce articularis Linn. f. was likewise based on specimens cultivated at Upsala, also with a reference to Rumphius, and is undoubtedly correctly placed as a synonym of Hedyotis verticillata Lam. Burman f., Fl. Ind. (1768) 33, erroneously referred it to Spermacoce tenuior Linn.; and Poiret, in Lam. Encycl. 5 (1804) 17, considered that the Rumphian figure represented Parietaria indica Linn., which is an entirely erroneous disposition of it. Hedyotis crateogonum Spreng. was based, at least in part, on Rumphius and is unquestionably a synonym of Hedyotis verticillata (Linn.) Lam, as here interpreted.

HEDYOTIS TENELLIFLORA Blume Bijdr. (1826) 971.

Crateogonum amboinicum I minus Rumph. Herb. Amb. 6: 25.

This was reduced by the younger Linnaeus to Spermacoce stricta Linn. f. in the original description of that species, Suppl. (1781) 120, in which he was followed by Willdenow, Roemer and Schultes, Poiret, and Henschel. Miquel, Fl. Ind. Bat. 2 (1857) 182, thought that it might be the same as the Philippine Hedyotis angustifolia Miq., which is entirely improbable. The reduction to Hedyotis tenelliflora Blume was suggested by Doctor Valeton, which in all probability is the correct disposition of the Rumphian species.

UNCARIA * Schreber

UNCARIA CORDATA (Lour.) comb. nov.

Restiaria cordata Lour. Fl. Cochinch. (1790) 639.

Uncaria pedicellata Roxb. Hort. Beng. (1814) 86, nomen nudum, Fl. Ind. 2 (1824) 128.

^{*} Retained name, Vienna Code; Ourouparia Aubl. (1775) is older.

Nauclea lanosa Poir. in Lam. Encycl. Suppl. 4 (1816) 64 (type!). Funis uncatus lanosus Rumph. Herb. Amb. 5: 65, t. 34, f. 3 (fig. C, in expl. pl.).

AMBOINA, Ermes, Robinson Pl. Rumph. Amb. 154, August 9, 1913, along the edges of forests, altitude about 250 meters.

Funis uncatus lanosus Rumph, is apparently the whole basis of Nauclea lanosa Poir., which Haviland reduces to Uncaria lanosa Wall., although Poiret's species may have been based on actual specimens. Roxburgh, Fl. Ind. 2 (1824) 126, referred t. 24, f. 2, 3, of Rumphius to Uncaria gambir (Hunter) Roxb., which is certainly an erroneous disposition of both figures. type of *Uncaria pedicellata* Roxb. was from the Moluccas. have adopted Loureiro's specific name for the species as it is much older than any of the others and as there is no doubt as to the identity of Restiaria cordata Lour.; for Haviland, who cites it as a synonym of Uncaria pedicellata Roxb., examined Loureiro's original specimen in the herbarium of the British Museum. Rumphius's reduced figure of Funis uncatus lanosus is rather poor, but his description applies unmistakably to the plant here interpreted as Uncaria cordata (Lour.) Merr. Dr. Valeton thinks that fig. 3 may go with Uncaria pteropoda Miq. and fig. 1 with U. cordata Merr.

UNCARIA SETILOBA Benth. in Hook. Lond. Journ. Bot. 2 (1843) 223.

Uncaria florida Vid. Phan. Cuming. Philip. (1885) 176.

Funis uncatus angustifolius Rumph. Herb. Amb. 5: 63, t. 34, f. 2 (fig. B. in expl. pl.).

AMBOINA, Batoe merah and Way tommo, Robinson Pl. Rumph. Amb. 149, August, 1913, on river banks and hillsides, altitude 5 to 80 meters.

Roxburgh, Fl. Ind. 2 (1824) 126, referred this to *Uncaria* gambir Roxb., which is certainly wrong. Miquel, Fl. Ind. Bat. 2 (1857) 150, thought that it might be *Uncaria ferrea* DC. It is unquestionably the same as *Uncaria setiloba* Benth., the type of which was from Amboina, and which is identical with the rather widely distributed Philippine form later described by Vidal as *Uncaria florida*. The species is known only from the Philippines and Amboina.

UNCARIA LONGIFLORA (Poir.) comb. nov.

Nauclea longiflora Poir. in Lam. Encycl. Suppl. 4 (1816) 63 (type!). Uncaria pteropoda Miq. Fl. Ind. Bat. 2 (1857) 343.

Funis uncatus latifolius Rumph. Herb. Amb. 5: 63, t. 34, f. 1 (fig. A. in expl. pl.).

AMBOINA, Way tommo and Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 153, August and October, 1913, in thickets, altitude 80 to 225 meters.

Nauclea longiflora Poir. was based wholly on Funis uncatus latifolius Rumph. and has been reduced to Uncaria acida Roxb., where it certainly does not belong. Under no. 153, cited above, two species are involved, one of which is apparently a form of Uncaria pteropoda Miq. Unfortunately the specimens are sterile. Dr. Valeton states that the Amboina specimen closely resembles those of Malacca and the Philippines in which the petioles are mostly destitute of the wings that are characteristic of the typical form of Uncaria pteropoda Miq., but that in the form and nervation of the leaves they are almost identical with those of the typical Sumatran and Javan form with large wings.

ADINA Salisbury

ADINA FAGIFOLIA (Teysm. & Binn.) Valeton in herb. comb. nov.

Nauclea fagifolia Teysm. & Binn. Cat. Hort. Bogor. (1866) 117, nomen nudum; Havil. in Journ. Linn. Soc. Bot. 33 (1897) 63.
Neonauclea fagifolia Merr. in Journ. Wash. Acad. Sci. 5 (1915) 539.
Ulassium mas Rumph. Herb. Amb. 3: 42, t. 23.

This species is not represented in our Amboina collections, yet unquestionably *Ulassium mas* is identical with *Nauclea fagifolia* Teysm. & Binn., a species of which the flowers and fruits have not as yet been described. Dr. Valeton has studied the species and finds it to be an *Adina*; it will be figured and described by him in a forthcoming number of Icones Bogoriensis. Teysmann, quoted by Hasskarl, referred the Rumphian species to *Nauclea fagifolia* Teysm. and Binn.; but Loureiro, Fl. Cochinch. (1790) 633, was entirely wrong in reducing it to *Echinus trisulcus* Lour., with which it has nothing in common. The species is cultivated in the botanic garden at Buitenzorg, Java, and is known from Celebes and Buru.

The two forms described in the same chapter with *Ulassium mas*, U. femina and U. lapideum, are too inadequately treated to warrant even a surmise as to their identity. One or both may be referable to *Adina fagifolia* Val., or they may represent entirely different species.

NEONAUCLEA Merrill

(Nauclea auct., non Linnaeus)

NEONAUCLEA MOLUCCANA (Miq.) Merr. in Journ. Wash. Acad. Sci. 5 (1915) 541.

Nauclea moluccana Miq. Ann. Mus. Bot. Lugd.-Bat. 4 (1868-69) 183. Laharus Rumph. Herb. Amb. 3: 44, t. 24.

AMBOINA, Amahoesoe, Liang, and Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 148, 161, 162, August and November, 1913, hillsides and light woods at low altitudes, locally known as laharong and nessat karang.

This is manifestly the form Rumphius described as Laharus, which Hasskarl, Neue Schlüssel (1866) 49, thought might represent Nauclea parvifolia Roxb.=Mitragyna parvifolia Korth. of India and Ceylon. The Amboina plant is a true Neonauclea and is identical with Neonauclea moluccana (Miq.) Merr., the type of which was from Buru. Dr. Valeton has indicated to me that this species, although closely resembling Nauclea purpurascens Korth., can be distinguished by its linear-lanceolate stipules, which in Korthals's species, as in the Philippine Neonauclea calycina (Bartl.) Merr., are obovate-spatulate; Nauclea purpurascens Korth. is apparently a synonym of Neonauclea calycina (Bartl.) Merr. A large-leaved form, Pl. Rumph. Amb. 162, from coral limestone cliffs at Amahoesoe, August 28, 1913, locally known as laharing, was thought by Doctor Robinson to represent Laharus femina Rumph.

Under Laharus Rumphius described three forms, distinguished wholly on wood characters; these are Laharus lapideus, L. femina, and L. mixta. The first two are certainly Neonauclea, and I consider both to be Neonauclea moluccana Merr.; the status of the third is very doubtful, and it probably does not belong in Neonauclea.

NEONAUCLEA sp.

Nessatus Rumph. Herb. Amb. 3: 45, t. 25.

Regarding this form, Hasskarl, Neue Schlüssel (1866) 49, states: "Nauclea spec.? s. forsan Anthocephalus indicus Rich.?" The figure is poor and is greatly reduced in size. The leaves are described as 7 to 8 inches long, $2\frac{1}{2}$ to 3 inches wide, with few nerves (5 to 7 in the figure), the heads solitary, long-peduncled, and smaller than those of Laharus (Neonauclea moluccana Merr.). Nessatus can scarcely be Anthocephalus indicus Rich., but is apparently a species of Neonauclea allied to N. moluccana Merr.

NAUCLEA Linnaeus

(Sarcocephalus Afzelius)

NAUCLEA UNDULATA Roxb. Hort. Beng. (1814) 14, nomen nudum, Fl. Ind. 2 (1824) 117.

Sarcocephalus undulatus Miq. Fl. Ind. Bat. 2 (1857) 133.

Cadamba nocturna Ham. ex Hensch. Vita Rumph. (1833) 156 (type!). Arbor noctis Rumph. Herb. Amb. 3: 82, t. 54.

Amboina, Negri lama, Robinson Pl. Rumph. Amb. 150, September 8, 1913, in light forests, altitude about 30 meters, locally known as humeleng.

Loureiro, Fl. Cochinch. (1790) 141, placed this under Nauclea

orientalis Linn., to which Nauclea undulata Roxb. is manifestly very closely allied. Hasskarl, Neue Schlüssel (1866) 53, placed it with doubt under Sarcocephalus undulatus Miq.=Nauclea undulata Roxb., and I consider that he was correct in this reduction; Roxburgh's type was from the Moluccas. The species can be distinguished from the very closely allied Nauclea orientalis Linn. (Sarcocephalus cordatus Miq.) only by some relatively unimportant characters. Arbor noctis II Rumph. Herb. Amb. 3: 83 is probably merely a form of the same species.

NAUCLEA MITRAGYNA (Miq.) Merr. in Journ. Wash. Acad. Sci. 5 (1915) 536.

Sarcocephalus mitragynus Miq. Ann. Mus. Bot. Lugd.-Bat. 4 (1868-69) 180.

Bancalus Rumph. Herb. Amb. 3: 84, t. 55.

This species is not represented in our Amboina collections. Linnaeus originally reduced Bancalus to Cephalanthus orientalis Linn,=Nauclea orientalis Linn, (Sarcocephalus cordatus Mig.), in Stickman Herb. Amb. (1754) 12, Amoen. Acad. 4 (1759) 123, Syst. ed. 10 (1759) 887, Sp. Pl. ed. 2 (1762) 243, in which he was followed by Burman f., Loureiro, Poiret, de Candolle, Henschel, and Pritzel. Willdenow, Persoon, Roemer and Schultes, and other authors have referred it to Nauclea purpurea Roxb.; but Roxburgh, Fl. Ind. 2 (1824) 123, explicitly states that Bancalus Rumph. is not the same as Nauclea purpurea Roxb.=Neonauclea purpurea (Roxb.) Merr. The identification of "Bancalus mas sive parvifolius" Rumph, Herb. Amb. 3: 83, t. 55, f. 1, 2, with Sarcocephalus mitragynus Miq. was made by Miquel, his type being from Ceram. I first referred it to Nauclea (Sarcocephalus) subdita (Korth.) Merr., a species that is not definitely known from the Moluccas. Nauclea mitragyna Mig. is in cultivation in the botanic garden at Buitenzorg, Java, the specimen having been secured by Teysmann in Amboina. Dr. Valeton writes that it greatly resembles Sarcocephalus subditus Korth., and that he doubts whether or not it is specifically distinct from Korthals's species.

Rumphius included in his description what he took to be two "species," Bancalus mas and Bancalus media (major in expl. pl.); but no definite characters are indicated, either in the descriptions or in the figures, by which two distinct species can be recognized, and it is suspected that the entire description and both figures are referable to Nauclea mitragyna (Miq.) Merr. It is a true Nauclea (Sarcocephalus), not a Neonauclea.*

^{*} Merrill, E. D. On the application of the generic name Nauclea of Linnaeus. Journ. Wash. Acad. Sci. 5 (1915) 530-542.

ANTHOCEPHALUS A. Richard

ANTHOCEPHALUS MACROPHYLLUS (Roxb.) Haviland in Journ. Linn. Soc. Bot. 33 (1897) 23, t. 4, f. 32-37.

Nauclea macrophylla Roxb. Hort. Beng. (1814) 14, nomen nudum, Fl. Ind. 2 (1824) 120.

Nauclea elegans Teysm. & Binn. ex Hassk. in Abhandl. Naturf. Gesellsch. Halle 9 (1866) 190 (Neue Schlüssel 48) (type!).

Samama Rumph. Herb. Amb. 3: 36, t. 19.

Amboina, Kati-kati, Robinson Pl. Rumph. Amb. 156, October 20, 1913, on hillsides, altitude about 50 meters, locally known as samama.

Nauclea macrophylla Roxb. was originally described from specimens cultivated in the botanic garden at Calcutta and received from Amboina, the original tree still existing at Calcutta as late as 1897. Linnaeus, Amoen. Acad. 4 (1759) 122, placed Samama, with doubt, under Cephalanthus orientalis Linn., which was manifestly an erroneous disposition of it. Hasskarl, Neue Schlüssel (1866) 48, thought that it might be the same as Anthocephalus morindifolius Korth., but also quoted Teysmann to the effect that it was Nauclea elegans Teysm. & Binn., a name that otherwise seems never to have been published and which must be typified by Samama Rumph.; it is not included in Index Kewensis. Samama is manifestly the same as Anthocephalus macrophyllus Havil.

MUSSAENDA Linnaeus

MUSSAENDA FORSTENIANA Miq. Ann. Mus. Bot. Ludg.-Bat. 4 (1868-69) 188.

Folium principissae angustifolium Rumph. Herb. Amb. 4: 111.

AMBOINA, Lateri, Robinson Pl. Rumph. Amb. 165, August 25, 1913, in forests, altitude about 160 meters.

Rumphius does not indicate to which of the two forms described the illustration pertains, but after a study of the two descriptions I have concluded that it goes with Folium principissae latifolium, not with Folium principissae angustifolium, the reverse of Hasskarl's consideration of the two. Folium principissae angustifolium as described is certainly represented by the specimen cited above, which differs radically from the illustration in its inflorescence. See the following species for a historical discussion of Folium principissae.

MUSSAENDA REINWARDTIANA Mig. Fl. Ind. Bat. 2 (1856) 211.

Mussaenda dasyphylla Miq. Ann. Mus. Bot. Lugd.-Bat. 4 (1868-69) 111.

Folium principissae latifolium Rumph. Herb. Amb. 4: 111, t. 51. Amboina, Batoe gadjah, Batoe merah, and Koesoekoesoe sereh, Robinson

Pl. Rumph. Amb. 168, August, 1913, on wooded hillsides and in ravines, altitude 25 to 250 meters.

The specimens agree entirely with Rumphius's description of Folium principissae latifolium and, except for the shape of the leaves, with the illustration of Folium principissae. The Rumphian plant manifestly has been interpreted by most authors largely by the figure, and Hasskarl has referred the figure to Folium principissae angustifolium, citing under this name the various species to which it has been reduced. Linnaeus placed it under Mussaenda frondosa Linn., a species typified by Ceylon specimens, in Stickman Herb. Amb. (1754) 17, Amoen. Acad. 4 (1759) 127, Syst. ed. 10 (1759) 931, Sp. Pl. ed. 2 (1762) 251, in which he was followed by Burman f., Loureiro, Willdenow, Persoon, Roemer and Schultes, and Pritzel. Lamarck, followed by Poiret, placed it under Gardenia frondosa Lam., a synonym of the Linnean species. Vahl, Symb. 3 (1794) 38, in distinguishing Mussaenda glabra Vahl from M. frondosa Linn. states: "Rumph. Folium Principissae huc potius pertinere videtur," in which disposition of it he was followed by Persoon, Roemer and Schultes, de Candolle, Don, Henschel, Wight and Arnott, and Dietrich; while Miquel, Fl. Ind. Bat. 2 (1857) 212, placed it under Mussaenda frondosa Linn. var. glabra (Vahl) Mig. Miguel, Fl. Ind. Bat. 2 (1759) 211, suggested that Folium principissae latifolium Rumph, was the same as Mussaenda reinwardtiana Miq. and in Ann. Mus. Bot. Lugd. Bat. 4 (1868-69) 187 that Folium principissae "maius" (that is, latifolium), might be Mussaenda dasuphulla Mig. Dr. Valeton states that the specimen cited above agrees absolutely with the description of Mussaenda dasyphylla Miq., as well as with specimens collected by Teysmann and by Boerlage, and that, although he has not seen the type specimen of Mussaenda reinwardtiana Miq., he can detect no real differences between the two descriptions.

GARDENIA Linnaeus

GARDENIA AUGUSTA (Linn.) comb. nov.

Varneria augusta Linn. Amoen. Acad. 4 (1759) 136 (type!). Gardenia jasminoides Ellis in Philos. Trans. 51² (1761) 935. Gardenia florida Linn. Sp. Pl. ed. 2 (1762) 305. Catsjopiri Rumph. Herb. Amb. 7: 26, t. 14, f. 2.

This commonly cultivated shrub is not represented in our Amboina collections. The form figured by Rumphius is the one with double flowers and has been very generally cited as a synonym of *Gardenia florida* Linn. since it was thus reduced by Linnaeus in the original description of the species. However,

Gardenia jasminoides Ellis is older than the Linnean name G. florida; and both are antedated by Varneria augusta Linn., which was based wholly on the Rumphian illustration and description, but which involves a generic name never taken up by Linnaeus in his later writings, and one that has been entirely overlooked by all authors.

GUETTARDA Linnaeus

GUETTARDA SPECIOSA Linn. Sp. Pl. (1753) 991.

Tittius litorea Rumph. Herb. Amb. 3: 39.

AMBOINA, Amahoesoe, Robinson Pl. Rumph. Amb. 167, August 28, 1913, along the seashore.

The only previously suggested identification of *Tittius litorea* is Henschel's reference of it to *Clerodendron infortunatum* Linn., which is manifestly wrong. The description applies very closely to *Guettarda speciosa* Linn., and I am confident that this is the correct disposition of it. The wood from Ternate that is described in the same chapter, under the name Bololo maluhi, probably belongs to this species.

TIMONIUS* de Candolle

TIMONIUS SERICEUS (Desf.) K. Sch. Fl. Kaiser Wilhelmsland (1889) 131.

Polyphragmon sericeum Desf. in Mém. Mus. Hist. Nat. Paris 6 (1820) 6, t. 2.

Timonius rumphii DC. Prodr. 4 (1830) 461 (type!).

Erithalis timon Spreng. Pl. Min. Cog. Pugillus 1 (1813) 18 (type!). Timonius Rumph. Herb. Amb. 3: 216, t. 140.

Amboina, Paso, Robinson Pl. Rumph. Amb. 166, July 20, 1913, on grassy hillsides, altitude about 10 meters, locally known as timon.

Willdenow, Sp. Pl. 1² (1800) 997, made the first reduction of *Timonius*, placing it as a variety of *Erithalis polygama* Forst. It is the type and whole basis of *Erithalis timon* Spreng. and of *Timonius rumphii* DC. Miquel, Fl. Ind. Bat. 2 (1857) 234, correctly reduced it, with *Timonius rumphii* DC., to *Polyphragmon sericeum* Desf., the type of which was from Timor. By other authors it has been erroneously reduced to *Polyphragmon minus* Rich. and to *Bobea wallichiana* Kostel. The species is known from Timor, Banda, Amboina, Ternate, and New Guinea with varieties in Timor, New Guinea, and Queensland.†

^{*} Retained name, Brussels Congress; Nelitris Gaertn. (1788), Porocarpus Gaertn. (1791), Polyphragmon Desf. (1820), Helospora Jack (1823), and Burneya C. & S. (1829) are older.

[†] See Valeton in Bull. Dépt. Agr. Ind. Néerl. 26 (1909) 52.

IXORA Linnaeus

IXORA CHINENSIS Lam. Encycl. 3 (1789) 344.

Ixora stricta Roxb. Hort. Beng. (1814) 10 (type!). Flamma silvarum peregrina Rumph. Herb. Amb. 4: 107, t. 47.

AMBOINA, Ermes, Robinson Pl. Rumph. Amb. 159, August 9, 1913, from cultivated plants.

Linnaeus originally reduced this to Pavetta indica Linn., in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 127, Syst. ed. 10 (1759) 894, Mant. 2 (1771) 331, in which erroneous disposition of it he was followed by Burman f., Murray, Willdenow, and Pritzel. Loureiro, Fl. Cochinch. (1790) 75, discusses it under Ixora coccinea Linn., to which it is allied, but from which it is manifestly distinct. Lamarck cites it in the original description of *Ixora chinensis*, his actual type being a specimen collected by Sonnerat, supposed to have come from China. is the whole basis of *Ixora stricta* Roxb. as originally published in the Hortus Bengalensis * and is undoubtedly the form later described under this name by Roxburgh, Fl. Ind. 1 (1820) 388, ed. 2, 1 (1832) 379, from specimens cultivated in the botanic garden in Calcutta, which were introduced from the Moluccas in Miguel, Fl. Ind. Bat. 2 (1857) 268, placed it under Pavetta stricta Blume, which is a synonym of Ixora stricta Roxb. species is not a native of Amboina, but according to Rumphius it was introduced from Java about 1675.

IXORA FULGENS Roxb. Hort. Beng. (1814) 10 (type!).

Flamma silvarum Rumph. Herb. Amb. 4: 105, t. 46.

AMBOINA, Soja, Mahija, and Koesoekoesoe sereh, Robinson Pl. Rumph. Amb. 169, August, 1913, in light forests, altitude 250 to 450 meters, locally known as daun pichapiring.

Flamma silvarum Rumph., representing a very characteristic species, was originally reduced by Linnaeus to Ixora coccinea Linn., in Stickman Herb. Amb. (1754) 16, Amoen. Acad. 4 (1759) 127, Syst. ed. 10 (1759) 893, Sp. Pl. ed. 2 (1762) 159, a species with which it has little in common, and to which it is not at all closely allied. This disposition of it was accepted by Burman f., Loureiro, Willdenow, and Persoon. Roemer and Schultes, Syst. 3 (1818) 179, erroneously placed it under Ixora incarnata Roxb. Lamarck, Encycl. 3 (1789) 343, placed it under Ixora lanceolata Lam., but the species described is certainly not the same as the Amboina plant. Flamma silvarum is the whole

^{*} C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 413.

basis of *Ixora fulgens* Roxb. as originally published in the Hortus Bengalensis (1814) 10, * while the species that Roxburgh later described under this name, Fl. Ind. 1 (1820) 387, is probably the same as the plant here referred to *Ixora fulgens* Roxb. The specimens on which the description was based were grown in the botanic garden at Calcutta, introduced from the Moluccas, and under it Roxburgh cites "Flamma silvarum Rumph. Amb. IV. 105. t. 46? pretty good." It has also been cited under *Ixora longiflora* Sm., Pavetta longiflora Sm., and by Miquel under Pavetta amboinica Blume. I strongly suspect that the last is a synonym of *Ixora fulgens* Roxb., but not having access to the original publications, I am unable to settle the status of *Ixora longiflora* Sm. (Pavetta longiflora Sm.) in connection with *Ixora fulgens* Roxb. *Ixora macrothyrsa* Teysm. & Binn. should be critically compared.

PSYCHOTRIA Linnaeus

PSYCHOTRIA sp.

Caju panu Rumph. Herb. Amb. 7: 12, t. 6, f. 2.

The figure represents a rather characteristic species of *Psychotria*, and the description of the seeds confirms this generic identification of *Caju panu*. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 186, placed it in *Psychotria*. It is not represented in our Amboina collections, and further identification of it is impossible at this time. The only species of the genus known from Amboinia is *Psychotria leptothyrsa* Miq. (*Rel. Robins.* 1736, 1749, det. Valeton), but *Caju panu* cannot be referred to Miquel's species.

HYDNOPHYTUM Jack

HYDNOPHYTUM AMBOINENSE Becc. Malesia 2 (1885) 138, t. 32, f. 1-7.

Nidus germinans formicarium niger Rumph. Herb. Amb. 6: 119,
t. 55, f. 1.

AMBOINA, Wakeroe, Robinson Pl. Rumph. Amb. 164, October 7, 1913, on trees in a mangrove swamp.

In the original description of *Hydnophytum formicarium* Jack the Rumphian species was reduced as a synonym, but Jack's species is entirely distinct from the Amboina form. Miquel, Fl. Ind. Bat. 2 (1857) 309, placed it under *Hydnophytum montanum* Blume, which Beccari considers as a form or variety of *H. formicarium* Jack. *Hydnophytum amboinense* Becc. was described from Amboina specimens and is certainly the form that Rumphius described as *Nidus germinans formicarium niger*, which Beccari reduced to *Hydnophytum amboinense* Becc.

^{*} See C. B. Robinson in Philip. Journ. Sci. 7 (1912) Bot. 413.

MYRMECODIA Jack

MYRMECODIA RUMPHII Becc. Malesia 2 (1884) 117, t. 12, f. 1-6.

Nidus germinans formicarium ruber Rumph. Herb. Amb. 6: 119, t. 55, f. 2.

Amboina, Hoetoemoeri road, Robinson Pl. Rumph. Amb. 152, September 24, 1913, epiphytic on Melaleuca, altitude about 200 meters, locally known as laru.

Jack, Trans. Linn. Soc. 14 (1823) 123, reduced the Rumphian plant to *Myrmecodia tuberosa* Jack in the original description of that species, but *Myrmecodia tuberosa* Jack is a species known from Sumatra, Singapore, Java, and Borneo and is quite different from the Amboina plant. De Candolle, Prodr. 4 (1830) 450, referred it to *Myrmecodia inermis* Gaudich., which is *Hydnophytum gaudichaudii* Becc. Beccari's description of *Myrmecodia rumphii* was based on an Amboina specimen collected by him in January, 1873, and to this species he reduced *Nidus germinans formicarium ruber* Rumph., which is certainly the correct disposition of it. *Myrmecodia amboinensis* Becc., Malesia 2 (1884) 97, nomen nudum, is apparently merely a misprint for *Myrmecodia rumphii* Becc.

PAEDERIA * Linnaeus

PAEDERIA FOETIDA Linn. Mant. 1 (1767) 52.

Apocynum foetidum Burm. f. Fl. Ind. (1768) 71.

Paederia amboinensis Miq. in Ann. Mus. Bot. Lugd.-Bat. 4 (1869) 254. Convolvulus foetidus Rumph. Herb. Amb. 5: 436, t. 160.

Amboina, Wakal, Robinson Pl. Rumph. Amb. 163, November 5, 1913, in thickets near the seashore, locally known as daun konto konto.

Convolvulus foetidus Rumph. was reduced by Linnaeus to Paederia foetida Linn. and by Burman f., to Apocynum foetidum Burm. f., although the types of both species were actual specimens. Practically all authors have cited Convolvulus foetidus as a synonym of Paederia foetida Linn., but there is nothing in the description or figure by which it can be distinguished from Paederia tomentosa Blume; for that matter there is nothing in the original description of either Paederia foetida Linn. or P. tomentosa Blume by which the two can be distinguished, yet authors generally agree in retaining them as distinct; Convolvulus foetidus Rumph. could with equal propriety be referred to Paederia foetida Blume. The actual Amboina specimen, cited above, is quite glabrous, with lanceolate leaves, and unfortun-

^{*}Retained name, Vienna Code; Hondbessen Adans. and Dauncontu Adans. (1763) are older.

ately presents no fruits. The fruit characters are the ones depended upon by modern botanists for distinguishing the two species here discussed. Whatever else it may prove to be, it is certainly the form described by Miquel as *Paederia amboinensis*.

MORINDA Linnaeus

MORINDA CITRIFOLIA Linn. Sp. Pl. (1753) 176.

Bancudus latifolia Rumph. Herb. Amb. 3: 158, t. 99.

Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 151, August 30, 1913, along the seashore, locally known as binkudong.

Bancudus latifolia Rumph. was first reduced to Morinda citrifolia Linn., in Stickman Herb. Amb. (1754) 13, Amoen. Acad. 4 (1759) 124, Syst. ed. 10 (1759) 930, Sp. Pl. ed. 2 (1762) 250, which disposition of it is manifestly correct and has been accepted by all authors. Morinda latifolia Rumph. is certainly the same as Bancudus latifolia Rumph. and accordingly is placed here, following Miquel and Hasskarl.

MORINDA BRACTEATA Roxb. Hort. Beng. (1814) 15, nomen nudum, Fl. Ind. 2 (1824) 198.

Bancudus angustifolia Rumph. Herb. Amb. 3: 157, t. 98.

Amboina, Hatiwe, Robinson Pl. Rumph. Amb. 155, September 14, 1913, in formerly cultivated lands, altitude about 10 meters.

Linnaeus erroneously reduced Bancudus angustifolia Rumph. to Morinda umbellata Linn., Sp. Pl. ed. 2 (1762) 250, in which he was followed by Burman f., Loureiro, Lamarck, Roemer and Schultes, and Pritzel. Willdenow, Sp. Pl. 1 (1798) 992, thought that it might be a variety of Morinda citrifolia Linn.; while Roemer and Schultes, Syst. 5 (1819) 215, placed it with doubt under Morinda angustifolia Roth. Roxburgh cites it in the original description of Morinda bracteata Roxb., with the statement that it "has the process of the calyx of my plant, but I cannot say they agree in other respects." It seems to be the same as Morinda bracteata Roxb. var. celebica Miq.*

CUCURBITACEAE

MELOTHRIA Linnaeus

MELOTHRIA INDICA Lour. Fl. Cochinch. (1790) 35.

Cucumis murinus viridis Rumph. Herb. Amb. 5: 463, t. 171, f. 2.

AMBOINA, Robinson, Pl. Rumph. Amb. 394, July 22, 1913, along the banks of the river, locally known as dawn pepinyu tikus.

This reduction was made by Loureiro in the original descrip-

^{*} See Valeton Ic. Bogor. 3 (1908) t. 269.

tion of *Melothria indica* and is apparently correct. As noted by Rumphius, the fresh plant has quite the odor and taste of the ordinary cucumber, *Cucumis sativus* Linn.

MELOTHRIA JAVANICA (Miq.) Cogn. in DC. Monog. Phan. 3 (1881) 625, ex descr.

Karivia javanica Miq. Fl. Ind. Bat. 11 (1856) 661.

Cucumis murinus ruber Rumph. Herb. Amb. 5: 463, t. 171, f. 1.

AMBOINA, Kati-kati, Robinson Pl. Rumph. Amb. 393, October 28, 1913, in open ravines, altitude about 70 meters, the fruit red, locally known as pepinyo tikos.

The identity of the specimen with Cucumis murinus ruber is quite certain, although the petioles are shorter than indicated by Rumphius's figure. Its identification with Melothria javanica has been made from the description alone, as I have seen no authentic specimens of that species; it is, however, reported from Amboina by Cogniaux. Hasskarl, Neue Schlüssel (1866) 147, suggests that it is Aechmandra blumeana Roem.—Melothria marginata (Blume) Cogn. Just what species is represented is possibly doubtful, but there is no question as to the correctness of the generic identification.

LUFFA (Tournefort) Linnaeus

LUFFA ACUTANGULA (Linn.) Roxb. Hort. Beng. (1814) 70, Fl. Ind. ed. 2, 3 (1832) 713.

Cucumis acutangulus Linn. Sp. Pl. (1753) 1011.

Petola bengalensis Rumph. Herb. Amb. 5: 408, t. 149.

This species is not represented in our Amboina collection, but is generally cultivated in the Indo-Malayan region and probably still occurs in Amboina. *Petola bengalensis* was reduced by Linnaeus to *Cucumis acutangulus*, in Stickman Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 132, Sp. Pl. ed. 2 (1763) 1436, and by many subsequent authors it was cited under *Luffa acutangula* (Linn.) Roxb. Rumphius's figure is excellent.

LUFFA CYLINDRICA (Linn.) Roem. Syn. 2 (1846) 63.

Momordica luffa Linn. Sp. Pl. (1753) 1009.

Momordica cylindrica Linn. l. c.

Luffa sylvestris Miq. Fl. Ind. Bat 1 1 (1856) 666 (type!).

Luffa petola Ser. in DC. Prodr. 3 (1828) 303 (type!).

Petola seu Petola Tschina Rumph. Herb. Amb. 5: 405, t. 147.

Petola silvestris Rumph. l. c. 409, t. 150.

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 395, climbing on trees near the beach, locally known as kalabasa utan.

The specimen cited is the ordinary wild form, which differs from the commonly cultivated form in its somewhat smaller leaves and much smaller fruits. This wild form is of wide distribution in the Malayan region, especially in thickets near the seashore. Plate 147 of Rumphius is an excellent representation of the cultivated form, while plate 150 is a fair representation of the wild form. Petola of Rumphius was reduced by Linnaeus to his *Momordica luffa*, in Stickman Herb, Amb. (1754) 23, Amoen. Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1278, but in Sp. Pl. ed. 2 (1763) 1433 he cites t. 148. It is the whole basis of Luffa petola Ser. in DC. Prodr. 3 (1828) 303. Another synonym is Luffa pentandra Roxb. Fl. Ind. ed. 2, 3 (1832) 712, this author also citing Petola Rumph. Herb. Amb. 5: t. 147 as representing his species. Petola silvestris Rumph. Herb. Amb. 5: 409, t. 150, is the whole basis of Luffa sylvestris Miq. Fl. Ind. Bat. 11 (1856) 666, which was erroneously reduced by Cogniaux, DC. Monog. Phan. 3 (1881) 461, to Luffa acutangula Roxb.; this synonym should be transferred to Luffa cylindrica Roem., the actual Amboina specimen cited above being a topotype of Miquel's species.

CITRULLUS Necker

CITRULLUS VULGARIS Schrad. in Linnaea 12 (1838) 412.

Cucurbita citrullus Linn. Sp. Pl. (1753) 1010.

Anguria indica Rumph. Herb. Amb. 5: 400, t. 146, f. 1.

Anguria indica altera Rumph. l. c. 400.

Amboina, in waste places near Castle Victoria, Robinson Pl. Rumph. Amb. 392, November 13, 1913, locally known as pateka.

The figure given by Rumphius is a good representation of the common watermelon. It was first reduced to *Cucurbita citrullus* by Linnaeus, in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1278, Sp. Pl. ed. 2 (1763) 1435, this reduction being followed by all early authors.

CUCUMIS Linnaeus

CUCUMIS SATIVUS Linn. Sp. Pl. (1753) 1012.

Cucumis? rumphii Hassk. in Abh. Naturf. Gesellsch. Halle 9 (1866) 280 (Neue Schlüssel (1866) 138) (type!).

Cucumis indicus I vulgaris Rumph. Herb. Amb. 5: 404.

Cucumis indicus III sinensis Rumph. Herb. Amb. 5: 404, t. 146, f. 2.

The common cucumber is not represented in our Amboina collections, but is widely cultivated in the Malay Archipelago. There is no doubt whatever as to the correctness of the reduction of *Cucumis indicus vulgaris*, while I am equally certain that *C. indicus sinensis* is but a small form of the same species;

the latter is the whole basis of Cucumis? rumphii Hassk., which, incidentally, is not listed in Index Kewensis. The figure is very poor. Cucumis indicus II boetonensis Rumph. l. c. 404 is probably another form of Cucumis sativus Linn. with somewhat 3-angled fruits; Hasskarl suggests that it may be C. trigonus Roxb. or C. turbinatus Roxb. (= trigonus Roxb.), which can hardly be accepted on account of the geographic range of Roxburgh's species, while Rumphius's description does not agree with the characters of C. trigonus Roxb. Cucumis indicus IV maximus Rumph. is referred by Hasskarl to Cucumis conomon Thunb.=C. melo Linn., and is probably a form of the latter. CUCUMIS MELO Linn. Sp. Pl. (1753) 1011.

Melo Rumph. Herb. Amb. 5: 404.

The description doubtless applies to this Linnean species, to which *Melo* Rumph. was reduced by Henschel. The major part of the description in this chapter, however, refers to the common cucumber, *Cucumis sativus* Linn.

BENINCASA Savi

BENINCASA HISPIDA (Thunb.) Cogn. in DC. Monog. Phan. 3 (1881) 513.

Cucurbita hispida Thunb. Fl. Jap. (1784) 322.

Benincasa cerifera Savi in Bibl. Ital. 9 (1818) 158.

Camolenga Rumph. Herb. Amb. 5: 395, t. 143.

AMBOINA, Robinson Pl. Rumph. Amb. 396, August 23, 1913, along roadsides, locally known as labu.

The identity of *Camolenga* is so evident that it scarcely needs discussion, for Rumphius's figure is an excellent one of this commonly cultivated plant. By Linnaeus it was erroneously reduced to *Cucurbita pepo* Linn., in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1859) 132, Syst. ed. 10 (1759) 1278, but generally it has been correctly placed by modern authors.

LAGENARIA Seringe

LAGENARIA LEUCANTHA (Duch.) Rusby in Mem. Torr. Bot. Club 4: 43.

Cucurbita leucantha Duch. in Lam. Encycl. 2 (1782) 150.

Cucurbita lagenaria Linn. Sp. Pl. (1753) 1010.

Lagenaria vulgaris Ser. in Mém. Soc. Phys. Genèv. 3 1 (1825) 25.

Cucurbita lagenaria Rumph. Herb. Amb. 5: 397, t. 144.

This commonly cultivated plant is not represented in our Amboina collections. The reduction was made by Linnaeus, in Stickman Herb. Amb. (1754) 23, Amoen. Acad. 4 (1859) 132, Syst. ed. 10 (1759) 1278, has been very generally followed by other authors, and is certainly the correct disposition of the Rumphian plant. It is suspected that the plant described as

Cucurbita indica vulgaris Rumph. Herb. Amb. 5: 398, is also a form of Lagenaria leucantha Rusby; although Hasskarl, Neue Schlüssel (1866) 137, does not definitely place it. It has been confused with Cucurbita pepo Linn. and C. melopepo Linn.

TRICHOSANTHES Linnaeus

TRICHOSANTHES TRIFOLIA (Linn.) comb. nov.

Momordica trifolia Linn. in Stickman Herb. Amb. (1754) 24, Amoen.

Acad. 4 (1759) 132, Syst. ed. 10 (1759) 1278 (type!).

Momordica trifoliata Linn. Sp. Pl. ed. 2 (1763) 1434 (type!); Burm. f. Fl. Ind. (1768) 309; Willd. Sp. Pl. 4 (1805) 604.

Trichosanthes trifoliata Blume Bijdr. (1826) 936; Cogn. in DC. Monog. Phan. 3 (1881) 383.

Involucraria trifoliata Roem. Syn. (1846) 99.

Poppya sylvestris Rumph. Herb. Amb. 5: 414, t. 152, f. 2.

This species is not represented in our Amboina collections. The change of name is necessary as *Momordica trifolia* Linn. antedates *M. trifoliata* Linn.; both are based wholly on the Rumphian figure and description. It is to be noted, however, that while Linnaeus in his first and second references correctly cited the plate, he gave as the name *Olus vespertilionis*, which appears, not in the descriptive text, but as a secondary name on page 413 in the explanation of the plate. *Trichosanthes trifoliata* Blume was based on *Momordica trifoliata* Linn., with the addition of Javan specimens. It is barely possible that the Amboina plant is not specifically identical with the Javan one, a point for the future monographer to determine.

TRICHOSANTHES ANGUINA Linn. Sp. Pl. (1753) 1008.

Cucumis anguinus Linn. Syst. ed. 10 (1759) 1279, Sp. Pl. ed. 2 (1763) 1437 (type!).

Petola anguina Rumph. Herb. Amb. 5: 407, t. 148.

This species is not represented in our Amboina collections. There is no doubt, however, as to the identity of *Petola anguina* with the widely cultivated *Trichosanthes anguina* Linn. It is to be noted that *Cucumis anguinus* Linn. was based wholly on the Rumphian reference and published quite independently of *Trichosanthes anguina* Linn., both appearing in the second edition of the Species Plantarum, the former on page 1437, the latter on page 1432.

CUCURBITA Linnaeus

CUCURBITA PEPO Linn. Sp. Pl. (1753) 1010 p. p.

Pepo indicus Burm. Index Universalis Herb. Amb. 7 (1755) [6] (type!).

Pepo indicus Rumph. Herb. Amb. 5: 399, t. 145.

Three forms are described by Rumphius, all of which I consider to represent variants of *Cucurbita pepo* Linn. The figure represents a form of the common squash, but was thought by Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 138, to represent *Lagenaria hispida* Ser.=*Benincasa hispida* Cogn., which is figured and described by Rumphius under the name *Camolenga* (see p. 493). Hasskarl thought that it was possibly intended for *Cucurbita cantalupensis* Haberle. *Pepo indicus* Burm. does not appear in Index Kewensis.

COCCINEA Wight and Arnott

*COCCINEA CORDIFOLIA (Linn.) Cogn. in DC. Monog. Phan. 3 (1881) 529.

Bryonia cordifolia Linn. Sp. Pl. (1753) 1012. Bryonia grandis Linn. Mant. 1 (1767) 126.

Momordica monadelpha Roxb. Fl. Ind. ed. 2, 3 (1832) 708.

Vitis alba indica Rumph. Herb. Amb. 5: 448, t. 166, f. 1.

This species is not represented in our Amboina collections; according to Rumphius it was an introduced and cultivated plant in Amboina. Vitis alba indica Rumph. was originally reduced by Linnaeus to Bryonia cordifolia Linn. Syst. ed. 10 (1759) 1279; but later, Mant. 1 (1767) 126, it was placed under Bryonia grandis Linn., which, however, is a synonym of Coccinea cordifolia (Linn.) Cogn. It is cited by Roxburgh in the original description of Momordica monadelpha Roxb.; and by other authors it has been cited under Coccinea indica W. & A., C. loureiriana Roem., and C. grandis Roem., all synonyms of Coccinea cordifolia (Linn.) Cogn. The species is widely distributed in the Indo-Malayan region in cultivation and is probably a native of British India.

MOMORDICA (Tournefort) Linnaeus

MOMORDICA CHARANTIA Linn. Sp. Pl. (1753) 1009.

Momordica indica Linn. in Stickm. Herb. Amb. (1754) 24, Amoen. Acad. 4 (1759) 132 (type!).

Amara indica Rumph. Herb. Amb. 5: 410, t. 151.

Amara sinica Rumph. l. c. 411.

Amara silvestris Rumph. l. c. 413, t. 152, f. 1?

Amboina, Paso, Robinson Pl. Rumph. Amb. 391, on trees near the beach, October 31, 1913, locally known as papari.

The reduction of *Amara indica* Rumph. to *Momordica charantia* Linn. is manifestly correct and scarcely needs discussion. It is to be noted, however, that the Rumphian figure is the whole basis of *Momordica indica* Linn., published in 1754, repeated in 1759, but which does not appear in subsequent literature; it is not included in Index Kewensis. *Amara sinica*

Rumph. is manifestly one of the cultivated forms with long fruits. *Amara sylvestris* may be the wild form with greatly reduced fruits, but there are some points in Rumphius's description that militate against this reduction. The figure of the latter is very poor, presenting a habit sketch only, without flowers or fruits.

MOMORDICA COCHINCHINENSIS (Lour.) Spreng. Syst. 3 (1826) 14.

Muricia cochinchinensis Lour. Fl. Cochinch. (1790) 596. Poppya rotunda Rumph. Herb. Amb. 5: 414, t. 153.

Amboina, Waë, Robinson Pl. Rumph. Amb. 390, November 29, 1913, climbing on trees along small streams near sea level, the fruit orange-red, locally known as pepinyu tikus.

Miquel, Fl. Ind. Bat. 1¹ (1856) 676, has placed this under *Trichosanthes cucumerina* Linn.; but the description, especially of the characteristic bracts and of the flower, is manifestly applicable to *Momordica*, not to *Trichosanthes*. Poppya oblonga Rumph., l. c. 414, is unquestionably also a species of *Momordica*, from the description; although Hasskarl, Neue Schlüssel (1866) 140, suggests that it is *Involucaria palmata* Roem.=*Trichosanthes bracteata* Voigt.

GOODENIACEAE

SCAEVOLA Linnaeus

SCAEVOLA FRUTESCENS (Mill.) Krause in Engl. Pflanzenreich 54 (1912) 125.

Lobelia frutescens Mill. Gard. Dict. ed. 8 (1768) no. 1. Lobelia taccada Gaertn. Fruct. 1 (1788) 119, t. 25. Scaevola koenigii Vahl Symb. Bot. 3 (1794) 36. Buglossum litoreum Rumph. Herb. Amb. 4: 116, t. 54.

AMBOINA, Amahoesoe, Robinson Pl. Rumph. Amb. 214, September 18, 1913, on rocks along the seashore, locally known as bapacheda.

Buglossum litoreum Rumph. was first reduced by Linnaeus to Lobelia plumieri Linn.—Scaevola plumieri Vahl, in Stickman Herb. Amb. (1754) 17, Amoen. Acad. 4 (1759) 127, Syst. ed. 10 (1759) 1237, which is a species distinct from Scaevola frutescens Krause, not the same as Buglossum litoreum Rumph. Murray, Syst. Veg. (1774) 178, referred it to Scaevola lobelia Murr., a synonym of S. plumieri Vahl. Other authors have reduced it as follows: Poiret to Lobelia taccada Gaertn.; Vahl to Scaevola koenigii Vahl; Roxburgh to Scaevola taccada Roxb.; and de Candolle to Scaevola velutina Presl; all are synonyms of Scaevola frutescens (Mill.) Krause.

COMPOSITAE

VERNONIA Schreber

VERNONIA CINEREA (Linn.) Less. in Linnaea 4 (1829) 291.

Conyza cinerea Linn. Sp. Pl. (1753) 862.

Senecio amboinicus Rumph. Herb. Amb. 6: 36, t. 14, f. 2.

AMBOINA, in and about the town of Amboina, Robinson Pl. Rumph. Amb. 426, August 4, 1913, in waste places, along roadsides, on walls, etc.

Senecio amboinicus was first reduced by Linnaeus, Amoen. Acad. 4 (1759) 134, Syst. ed. 10 (1759) 1213, Sp. Pl. ed. 2 (1763) 1208, to Conyza chinensis Linn., which is supposed to be Blumea chinensis (Linn.) DC. Lamarck, Encycl. 2 (1768) 83, correctly reduced it to Conyza cinerea Linn.=Vernonia cinerea Less. Blume, Bijdr. (1826) 893, places it under his Vernonia linifolia, while de Candolle, Prodr. 5 (1836) 25, places it under Vernonia leptophylla DC.; both of these are synonyms of Vernonia cinerea (Linn.) Less.

ADENOSTEMMA Forster

ADENOSTEMMA LAVENIA (Linn.) O. Kuntze Rev. Gen. Pl. 1 (1891) 304.

Verbesina lavenia Linn. Sp. Pl. (1753) 902.

Adenostemma viscosum Forst. Char. Gen. (1776) 90.

Olus scrofinum album Rumph. Herb. Amb. 6: 34, t. 14, f. 1.

Amboina, near the town of Amboina, Robinson Pl. Rumph. Amb. 427, July 25, 1913, in wet places.

Linnaeus, Amoen. Acad. 4 (1759) 134, Sp. Pl. ed. 2 (1763) 1208, followed by Burman f., Fl. Ind. (1768) 179, erroneously reduced Olus scrofinum to Conyza cinerea Linn.=Vernonia cinerea Less. The description given by Rumphius is unmistakably applicable to Adenostemma, while the figure is a fair representation of this common and widely distributed species. Hasskarl, Neue Schlüssel (1866) 158, considered that Olus scrofinum album was in all probability Adenostemma viscosum Forst.

AGERATUM Linnaeus

AGERATUM CONYZOIDES Linn. Sp. Pl. (1753) 839.

Olus scrofinum rubrum Rumph. Herb. Amb. 6: 35.

AMBOINA, roadsides in and about the town of Amboina, Robinson Pl. Rumph. Amb. 428, August 4, 1913.

The description agrees sufficiently well with Ageratum conyzoides Linn. to render this determination of Olus scrofinum rubrum fairly certain. Hasskarl, Neue Schlüssel (1866) 158, has suggested that it may be a species of Conyza (Blumea) or Vernonia.

BLUMEA * de Candolle

BLUMEA BALSAMIFERA (Linn.) DC. Prodr. 5 (1836) 447.

Conyza balsamifera Linn. Sp. Pl. ed. 2 (1763) 1208. Conyza odorata Rumph. Herb. Amb. 6: 55, t. 24, f. 1.

Amboina, Lateri, Robinson Pl. Rumph. Amb. 417, August 25, 1913, in open woods, altitude about 100 meters.

The Rumphian reference given by Linnaeus in the original publication of Conyza balsamifera Linn. is presumably the type of the species. It is the first citation given by Linnaeus, and there is no evidence that he had an actual specimen before him. The species has very generally been correctly interpreted by succeeding authors, Blumea balsamifera (Linn.) DC. being a rather well-marked and characteristic species of wide Indo-Malayan distribution. Loureiro placed the Rumphian figure under his Baccharis salvia, Fl. Cochinch. (1790) 494, but Baccharis salvia Lour, is a synonym of Blumea balsamifera (Linn.) DC. Another synonym is Pluchea balsamifera Less. in Linnaea 6 (1831) 150. It is to be noted that the actual Amboina specimens are much less pubescent than are Indo-Malayan specimens generally placed under Blumea balsamifera DC.; the leaves are more lobed at the base, as shown in Rumphius's figure, and in aspect approach the Malayan species generally known as Blumea appendiculata (Blume) DC. The involucral bracts, however, are densely pubescent.

BLUMEA APPENDICULATA (Blume) DC. Prodr. 5 (1836) 447.

Conyza appendiculata Blume Bijdr. (1826) 895, non Lam. Conyza mas Rumph. Herb. Amb. 6: 56?
Conyza cadaverum Rumph. l. c.?

Amboina, Lateri, Robinson Pl. Rumph. Amb. 416, August 25, 1913, in wet places at an altitude of 100 meters, the plant 1 to 2.5 meters high.

The specimen probably represents both Conyza mas and C. cadaverum as described by Rumphius and is the same as the Philippine plant that has been interpreted as Blumea appendiculata (Blume) DC. The specific name appendiculata is invalidated by Conyza appendiculata Lam., but no change is made here in consideration of the fact that the status of Blumea appendiculata DC. is very uncertain; it may prove to be merely a form of Blumea macrophylla (Blume) DC. or of Blumea aromatica (Wall.) DC., or both of these may prove to be but a single species. An examination of the actual types and a critical revision of the entire genus are desirable.

^{*}Retained name, Vienna Code; Placus Lour. (1790) is older.

BLUMEA CHINENSIS (Linn.) DC. Prodr. 5 (1836) 444.

Conyza chinensis Linn. Sp. Pl. (1753) 862.

Conyza pubigera Linn. Mant. 1 (1767) 113, saltem quoad syn. Rumph.! Sonchus volubilis Rumph. Herb. Amb. 5: 299, t. 103, f. 2.

Amboina, Way tommo, Pl. Rumph. Amb. 421, August 17, 1913, in thickets along the river, altitude about 50 meters, flowers yellow.

Conyza chinensis Linn. was based solely on a specimen collected in China by Toren, and must be interpreted from that specimen. Later, Linnaeus himself referred to it Sonchus volubilis Rumph.; and, as Blumea chinensis DC, is at present interpreted, this reduction seems to be correct. At least the Amboina plant is identical with the Philippine and Malayan form that appears in herbaria as Blumea chinensis DC. The reduction was made by Linnaeus, in Stickman Herb. Amb. (1754) 22, but is excluded in the reprint of this work in Amoen. Acad. 4 (1759) 131. The figure is again cited by Linnaeus, Mant. 1 (1767) 113, under Conyza pubigera Linn.; but the species was based primarily on specimens cultivated in the botanic garden at Upsala, and these specimens, in all probability, were not of the same species as the plant Rumphius described and figured. Loureiro, Fl. Cochinch. (1790) 485, placed it under his Cacalia procumbens, but Cacalia procumbens Lour, is supposed to be identical with Gynura sarmentosa DC. De Candolle, Prodr. 6 (1837) 298, places it under Gynura sarmentosa (Blume) DC. with the following statement:

Icon. Rumph. 5 t. 103, f. 2 nostram plantam non male refert et ideo forte Cacalia procumbens Lour. coch. 2. p. 592 huc referenda?

Sonchus volubilis Rumph. is certainly not the same as Gynura sarmentosa (Blume) DC.

BLUMEA sp.

Conyza indica minor Rumph. Herb. Amb. 6: 56?

AMBOINA, Kati-kati, Robinson Pl. Rumph. Amb. 415, October 19, 1913, in grasslands, altitude about 70 meters.

The identity of *Conyza indica minor* with *Blumea* is merely possible, the description being too indefinite to warrant a positive identification at this time. Burman f., Fl. Ind. (1768) 180, mentions it under *Conyza hirsuta* Linn., but it certainly is not this species. It can hardly be *Blumea balsamifera* DC. as suggested by Henschel, and it certainly cannot be *Vicoa indica* DC. var. attenuata DC. as suggested by Hasskarl, Neue Schlüssel (1866) 162. Even if the specimen cited above represents the Rumphian *Conyza indica minor*, which is very doubtful, I cannot

refer it definitely to any species of *Blumea*, although it doubtless represents some described species of this difficult genus.

PLUCHEA Cassini

PLUCHEA INDICA (Linn.) Less. in Linnaea 6 (1831) 150.

Baccharis indica Linn. Sp. Pl. (1753) 861.

Sonchus volubilis javanicus Rumph. Herb. Amb. 5: 299, t. 104, f. 1.

Amboina, near the town of Amboina, Robinson Pl. Rumph. Amb. 422, September 25, 1913, along borders of tidal swamps, locally known as biluntas.

The Rumphian species was correctly reduced to Baccharis indica by Burman f., Fl. Ind. (1768) 178; but Loureiro, Fl. Cochinch. (1790) 495, erroneously referred it to Conyza pubigera Linn., which is a species of Blumea (see p. 499). Lamarck, Encycl. 2 (1768) 84, suggested that it might be the same as Conyza prolifera Lam.=Vernonia cinerea (Linn.) Less.; and, finally, de Candolle, Prodr. 5 (1836) 320, placed it under Microglossa volubilis DC. Pluchea indica (Linn.) Less. is certainly the correct disposition of Sonchus volubilis javanicus Rumph. and the figure cited above, but Sonchus volubilis Rumph. l. c. 5:299, t. 103, f. 2, is Blumea chinensis DC.

ECLIPTA * Linnaeus

ECLIPTA ALBA (Linn.) Hassk. Pl. Jav. Rar. (1848) 528.

Verbesina alba Linn. Sp. Pl. (1753) 902.

Ecliptica Rumph. Herb. Amb. 6: 43, t. 18, f. 1.

Amboina, Robinson Pl. Rumph. Amb. 423, July 29 and August 30, 1913, near the town of Amboina, in sago swamps and in wet places, locally known as gandarussa utan.

This was erroneously reduced by Burman f., Fl. Ind. (1768) 184, to Verbesina biflora Linn. (= Wedelia biflora DC.), in which he was followed by Linnaeus, Mant. 2 (1771) 475, and by Murray, Syst. Veg. (1774) 648. Other names involved are Eclipta erecta Linn., E. prostrata Linn., and E. alba Hassk. var. erecta Hassk., all of which are properly synonyms of Eclipta alba (Linn.) Hassk.

WEDELIA Jacquin

WEDELIA BIFLORA (Linn.) DC. in Wight Contrib. (1834) 18.

Verbesina biflora Linn. Sp. Pl. ed. 2 (1763) 1272.

Verbesina aquatica Burm. Index Alt. Herb. Amb. (1769) [18] (type!). Seruneum aquatile Rumph. Herb. Amb. 5: 423, t. 156, f. 1.

^{*} Retained name, Brussels Congress; Eupatoriophalacron Adans. (1763) is older.

Amboina, Caju poeti, Robinson Pl. Rumph. Amb. 419, August 2, 1913, borders of light forests, ascending to an altitude of about 400 meters.

Miquel, Fl. Ind. Bat. 2 (1857) 73, suggests that Seruneum aquatile is nearly allied to Wollastonia strigulosa DC.; while Hasskarl, Neue Schlüssel (1866) 142, places it under Wedelia scaberrima DC. I cannot see why the Amboina plant, which certainly represents Seruneum aquatile, should not be referred to the common and widely distributed Wedelia biflora (Linn.) DC. The forms mentioned by Rumphius, l. c. 423, 426, as I album, II rubrum, and III album lanuginosum are all apparently referable to Wedelia and may be forms of Wedelia biflora DC.

SPILANTHES Jacquin

SPILANTHES ACMELLA (Linn.) Murr. Syst. (1774) 610.

Verbesina acmella Linn. Sp. Pl. (1753) 901. ABCdaria Rumph. Herb. Amb. 6: 145, t. 65.

AMBOINA, Robinson Pl. Rumph. Amb. 418, August 20, 1913, in a sago swamp near the town of Amboina.

This common and widely distributed species was unquestionably correctly reduced by Linnaeus, in Stickman Herb. Amb. (1754) 28, Amoen. Acad. 4 (1759) 135, Sp. Pl. ed. 2 (1763) 1271, to Verbesina acmella Linn. = Spilanthes acmella Murr. Through error it is cited as a synonym of Hedysarum gangeticum Linn. (= Desmodium gangeticum DC.) by Linnaeus in his Systema ed. 10 (1759) 1169. Other names involved, to which ABCdaria has been reduced, are Bidens acmella Lam., Spilanthes pseudo-acmella Murr., and Spilanthus tinctorius Lour.; the first two being proper synonyms of Spilanthes acmella Murr., the latter supposed to be Adenostemma viscosum Forst., with which ABCdaria of Rumphius has little in common.

BIDENS Linnaeus

BIDENS CHINENSIS Willd. Sp. Pl. 3 (1804) 1719.

Bidens pilosa Linn. var. chinensis Linn. Mant. 3 (1771) 281? Agrimonia molucca Rumph. Herb. Amb. 6: 38, t. 15, f. 2.

Amboina, Batoe merah, Robinson Pl. Rumph. Amb. 424, July 30, 1913, in rocky soil, altitude about 10 meters.

Linnaeus originally reduced Agrimonia molucca Rumph. to Bidens bipinnata Linn., in Stickman Herb. Amb. (1754) 26, Amoen Acad. 4 (1759) 134, where it certainly does not belong. Loureiro, Fl. Cochinch. (1790) 488, transferred it to Bidens pilosa Linn., a species closely allied to B. chinensis Willd., and one to which Willdenow's species has very generally been reduced by most authors. Willdenow cites Agrimonia molucca in the

original description of *Bidens chinensis*, this being manifestly the correct disposition of it. De Candolle, Prodr. 5 (1836) 596, placed it with doubt under *Bidens wallichii* DC., which is a synonym of *B. chinensis* Willd.; while Miquel, Fl. Ind. Bat. 2 (1857) 78, placed it under *Bidens peduncularis* Gaudich. The form described by Miquel under this name is not Gaudichaud's species, but is *Bidens chinensis* Willd. As noted above *Bidens chinensis* Willd. has very generally been sunk in *B. pilosa* Linn., but it is specifically distinct.* The Amboina material has been determined as *Bidens chinensis* Willd. by Mr. E. E. Sherff, who is making a critical study of the genus.

CHRYSANTHEMUM Linnaeus

CHRYSANTHEMUM INDICUM Linn. Sp. Pl. (1753) 889.

Matricaria sinensis Rumph. Herb. Amb. 5: 259, t. 91, f. 1 (incl. I alba, II lutea, III rubra).

This widely distributed, cultivated plant is not represented in our Amboina collections. The figure is an excellent representation of one of the commonly cultivated Malayan forms. It was first reduced by Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1221, Sp. Pl. ed. 2 (1763) 1253, and this reduction has been followed by all subsequent authors.

ARTEMISIA Linnaeus

ARTEMISIA VULGARIS Linn. Sp. Pl. (1753) 848.

Artemisia latifolia Rumph. Herb. Amb. 5: 261, t. 91, f. 2.

Artemisia latifolia rubra Rumph. l. c. 261?

There is no specimen of this widely distributed and well-known species in our Amboina collections. The figure is an excellent representation of $Artemisia\ vulgaris$. The reduction of the Rumphian figure and description was first made by Burman f., Fl. Ind. (1768) 177, in which he was followed by Loureiro, Fl. Cochinch. (1790) 491. Willdenow, Sp. Pl. 3 (1800) 1846, placed it under his $Artemisia\ indica$, which he considered to represent a species distinct from the common European $Artemisia\ vulgaris\ Linn.$; it is, however, a synonym of $Artemisia\ vulgaris\ Linn$. Hasskarl, Neue Schlüssel (1866) 118, suggested that $Artemisia\ latifolia\ rubra\ Rumph$. might be the same as $Artemisia\ grata\ Wall.=A.\ roxburghiana\ Bess.$; the range of the latter makes this suggested reduction an impossible one. It

^{*} See Schulz, O. E. Bidens chinensis (L.) Willd. und verwandte Arten. Engl. Bot. Jahrb. 50 (1914) Suppl. 176-187.

may be a form of the common *Artemisia vulgaris* Linn., or it may be an entirely different species. The description is too indefinite to permit of its certain determination. It was not from Amboina, but from a small island, Tagoelanda, near the northern end of Celebes.

CARTHAMUS Linnaeus

CARTHAMUS TINCTORIUS Linn. Sp. Pl. (1753) 830. Cnicus indicus Rumph. Herb. Amb. 5: 215, t. 79, f. 2.

This species is not represented in our Amboina collections. It is found in scattered cultivation throughout the Malayan region, and Rumphius's figure is a fair representation of this common and well-known plant. *Cnicus indicus* was first reduced to *Carthamus tinctorius* by Linnaeus, in Stickman Herb. Amb. (1754) 21, Amoen. Acad. 4 (1759) 130, Syst. ed. 10 (1759) 1202, Sp. Pl. ed. 2 (1763) 1163, in which he has been followed by numerous other authors. This is unquestionably the correct

EMILIA Cassini

disposition of the plant figured and described by Rumphius.

EMILIA SONCHIFOLIA (Linn.) DC. Prodr. 6 (1837) 302.

Cacalia sonchifolia Linn. Sp. Pl. (1753) 835.

Sonchus amboinicus Rumph. Herb. Amb. 5: 297, t. 103, f. 1.

Amboina, Batoe merah and Roemah tiga, Robinson Pl. Rumph. Amb. 420, July 20, 1913, in rocky and sandy soil, sea level to an altitude of about 15 meters, locally known as buka manis.

Sonchus amboinicus Rumph. was first reduced to Cacalia sonchifolia Linn. by Linnaeus, in Stickman Herb. Amb. (1754) 22, Amoen. Acad. 4 (1759) 131, Syst. ed. 10 (1759) 1204, Sp. Pl. ed. 2 (1763) 1169, in which he was generally followed by later authors until de Candolle transferred the species to Emilia. In the more recent literature it appears under Emilia sonchifolia DC., to which species it manifestly belongs.

CREPIS Linnaeus

CREPIS JAPONICA (Linn.) Benth. Fl. Hongk. (1861) 194.

Prenanthes japonica Linn. Mant. 1 (1767) 107.

Olus scrofinum luteum Rumph. Herb. Amb. 6: 35?

AMBOINA, Batoe mera, Robinson Pl. Rumph. Amb. 425, in ditches, altitude about 5 meters, July 20, 1913.

The description given by Rumphius is not sufficient to determine whether or not *Crepis japonica* is the plant intended by him. Hasskarl, Neue Schlüssel (1866) 158, has suggested that the description applies to some species of *Blumea*. The most

that can be definitely said regarding the Rumphian plant is that it was a small composite with yellow flowers and pappiferous achenes.

COMPOSITAE ? indet.

Pilosella amboinica Rumph. Herb. Amb. 6: 148.

The description is not sufficiently definite to warrant an identification of the plant. Hasskarl, Neue Schlüssel (1866) 177, thought that it might be a species of *Vernonia*. Two forms are described, with blue and with white flowers.

SPECIES DESCRIBED OR MENTIONED BY RUMPHIUS THAT CANNOT BE DEFINITELY REFERRED TO THEIR PROPER FAMILIES

Below are listed forty-six Rumphian species that cannot, from data at present available, be definitely referred to species described under the binominal system. Other species of somewhat similar doubtful status occur in the Herbarium Amboinense; but those that can be definitely referred to their proper families, genera, or probable species are discussed under the family, generic, or specific names, as the case may be, in the preceding systematic enumeration. It is very doubtful if many of the species listed below can be definitely determined, yet some of them can be certainly placed through field work carried on with special reference to the native names cited by Rumphius. From a systematic standpoint, however, these remaining doubtful Rumphian species are of no importance, as in no case has a binominal been based on any of the descriptions.

Lignum moschatum Rumph. Herb. Amb. 2: 41.

Under this name three kinds of wood are described. There is no description of the plants themselves. The only suggested reduction is that of Henschel, Vita Rumph. (1833) 146, who quotes Hamilton's opinion that at least one of the species is *Limonia acidissima* Linn. There is little or no authority for this reduction.

Lignum tsjidji Rumph. Herb. Amb. 2: 50.

Under this name a wood is described, which according to Rumphius came from Kwangtung, Cambodia, and Siam. The only suggested reduction is that made by Henschel, Vita Rumph. (1833) 146, who referred it to *Erythroxylum monogynum* Roxb. The range of Roxburgh's species, India and Ceylon, makes this reduction an impossible one.

Pseudo-Sandalum buroense Rumph. Herb. Amb. 2: 55.

The description is sufficiently long and detailed, but I am unable to recognize the family to which the plant belongs. It was from Buru, there known as roweyl, lowelle, rawelle, and bahamalosey. An exploration of Buru will doubtless yield material by which its status can be determined. The other plant described in this chapter, Pseudo-Sandalum amboinense, is Osmoxylon umbelliferum (Lam.) Merr.

Jamtsja Rumph. Herb. Amb. 3: 17.

The description is of the wood only. No data are given by which it can be identified.

Metrosideros molucca femina Rumph. Herb. Amb. 3: 25, t. 12.

I do not recognize the group to which this species belongs, although the description is good, as is also the figure. It is not represented in our Amboina collections. It has nothing to do with the two other forms described in this chapter, of which Metrosideros molucca mas is Homalium foetidum Benth., and Metrosideros molucca fungosa is apparently Harpullia arborea Radlk.

Morfalla Rumph. Herb. Amb. 3: 46.

A tree from the Sula Islands and Ceram, briefly described. From the digitate leaves Hasskarl, Neue Schlüssel (1866) 49, suggested that it might belong in the *Araliaceae*. The wood characters given by Rumphius make this reduction an impossible one. The flowers and fruits were unknown to Rumphius.

Corius mas Rumph. Herb. Amb. 3: 48, t. 27.

Hasskarl, Neue Schlüssel (1866) 49, quotes Teysmann's opinion that this may be a species of Tanghinia=Cerbera. This suggested reduction is certainly incorrect. The description is ample, and the figure presents a characteristic plant that should be easily recognized when once collected in Amboina. The native names cited are ekora, ekore, caju kore, aykole, and kole. It probably belongs in the Apocynaceae.

Corius femina Rumph. Herb. Amb. 3: 48.

This description, forming a part of the same chapter as *Corius mas*, applies to a quite different form. No suggestion has been made as to its status, and I do not recognize the group to which it belongs.

Carbonaria mas Rumph. Herb. Amb. 3: 52, t. 29.

A species of doubtful status. Thouars, in Lam. Encycl. Suppl. 3 (1813) 727, placed it under *Monimia*, where is certainly does

not belong. Hasskarl thought that it belonged in *Elaeocarpus*, while Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 50, placed it in *Aglaia*. If an *Aglaia*, which is very improbable, it belongs in the group of very few species with simple leaves. It cannot possibly be an *Elaeocarpus*. The figure represents a characteristic species, and it should be readily recognized when once collected in Amboina.

Carbonaria femina Rumph. Herb. Amb. 3: 53.

Hasskarl, Neue Schlüssel (1866) 50, has suggested that this may be a species of *Elaeocarpus*. There is nothing in the description to indicate that this reduction is the correct disposition of it.

Carbonaria altera Rumph. Herb. Amb. 3: 54.

Poiret, in Lam. Encycl. Suppl. 3 (1813) 727, thought that this might be some species of *Monimia*; it possibly belongs in the *Monimiaceae*. The native names cited are *hanet* and *ulit halewan*. The form described in the same chapter as *angustifolia* may belong in the same group as *Carbonaria altera*, whatever this may prove to be.

Carbonaria altera litorea Rumph. Herb. Amb. 3: 55.

Undeterminable from any data given by Rumphius. Possibly in the same group as *Carbonaria altera* Rumph.

Mangium silvestre Rumph. Herb. Amb. 3: 57, t. 31.

This has been considered by several authors as possibly representing a species of Garcinia; while Henschel, Vita Rumph. (1833) 154, placed it, with doubt, under $Mangifera\ laxiflora$ Desr., where it certainly does not belong. The figure looks suspiciously like $Buchanania\ arborea$ Blume, and the species may ultimately prove to be a Buchanania. The description of the fruits, however, does not at all apply to Buchanania, although the figure of them conforms well to those of this genus. It is possible that the description is a mixture of two different species. $Buchanania\ amboinensis\ Miq.$, represented by $Rel.\ Robins.\ 1776$, 1777, should be compared with this.

Lignum salis minus Rumph. Herb. Amb. 3: 61.

Undeterminable from any data given by Rumphius. The description includes data regarding the habit of the plant, its leaves, and its wood, with no data regarding the flowers or the fruits. The native names cited are aytassi, aytassi laun maun, and aytassi kitsjil.

Arbor facum minor Rumph. Herb. Amb. 3: 79, t. 51.

The description is very short, and the figure presents merely a leafy branch. Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 53, placed it in the *Sapotaceae*; but there is no warrant for this reduction.

Cauda felis saxatilis Rumph. Herb. Amb. 4: 84.

Undeterminable from the description alone. The species has nothing to do with the other forms described in this chapter, which pertain to the genus Acalypha.

Kowackil Rumph. Herb. Amb. 3: 91.

The description is very brief and applies chiefly to the vegetative characters of the plant. It is compared with *Pulasarius arbor*, described in the same chapter, which is *Lepiniopsis ternatensis* Valet. Its status is quite undeterminable.

Arbor palorum nigra Rumph. Herb. Amb. 3: 99, t. 66.

Unrecognizable, yet the figure represents a sufficiently characteristic plant, which should be readily determinable when once collected in Amboina.

Vertifolia alba Rumph. Herb. Amb. 3: 100.

Under *Vertifolia* Rumphius described two forms, *V. alba* and *V. rubra*, and figured one (*t. 67*), but did not indicate to which of the two the figure pertained. Our Amboina material shows conclusively that the figure belongs with *Vertifolia rubra*, which is *Perrottetia moluccana* (Blume) Loesen.; see p. 335. Hasskarl, apparently judging chiefly from the figure, thought that the species might belong in the *Euphorbiaceae*, while Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 55, definitely placed it in *Ehretia*, where it manifestly does not belong. *Vertifolia alba*, as described, is entirely different from *V. rubra*, and its status is undeterminable from any data at present available.

Olus catappanicum Rumph. Herb. Amb. 3: 182.

The status of this form is unrecognizable from the data given by Rumphius. The form very briefly described in the same chapter as *Olus catappanicum aliud* may be a *Barringtonia*.

Tanarius major II Rumph. Herb. Amb. 3: 192.

Undeterminable. The other form described in this chapter, and of which a figure is given, is *Schizomeria serrata* Hochr.

Daun parawas Rumph. Herb. Amb. 3: 203.

This was from Batavia, Java. It is probably some rutaceous plant, as suggested by Hasskarl, Neue Schlüssel (1866) 67, and is possibly a species of *Clausena*.

Frutex carbonarius I albus Rumph. Herb. Amb. 4: 126, t. 62.

The figure is rather characteristic, but might represent either a rubiaceous or a melastomataceous plant. Hasskarl, Neue Schlüssel (1866) 85, thought that it might be a species of *Marumia*; while Teysmann, as quoted by Hasskarl, placed it in the *Rubiaceae*. Its status cannot be definitely determined without more material from Amboina. The same name, without description, is given by Rumphius Herb. Amb. 3: 33.

Frutex carbonarius II ruber Rumph. Herb. Amb. 4: 126.

Perhaps a species of the *Melastomataceae*, as suggested by Hasskarl.

Frutex carbonarius latifolius Rumph. Herb. Amb. 4: 127.

Probably a species of the *Melastomataceae*, as suggested by Hasskarl.

Frutex carbonarius asper Rumph. Herb. Amb. 4: 127.

Probably a species of the *Melastomataceae*. Hasskarl, Neue Schlüssel (1866) 85, suggested that it might be a *Rhodamnia*, of the *Myrtaceae*.

Frutex cerasiformis Rumph. Herb. Amb. 4: 134, t. 68.

The figure represents a very characteristic species, which, however, I do not recognize. It has much the appearance of *Mimusops*, but the description does not conform to this genus. Limonellus litoreus Rumph. Herb. Amb. 5: 24.

Undeterminable from the very brief description given by Rumphius.

Sinapister Rumph. Herb. Amb. 5: 73, t. 39, f. 1.

Undeterminable from data at present available. The drawing presents a leafy branch with mature and juvenile leaves, but no flowers or fruits. Sinapister minor described in the same chapter may or may not belong to the same genus, whatever this may prove to be.

Funis butonicus major Rumph. Herb. Amb. 5: 77, t. 41, f. 1.

Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 97, considered this to be a species of *Artabotrys*, but the special characters of *Artabotrys* are entirely wanting in both the description and the figure. I do not recognize the group to which the form figured belongs.

Serratula amara parvifolia Rumph. Herb. Amb. 5: 82.

Undeterminable from the description alone. Hasskarl, Neue Schlüssel (1866) 98, thought it was a scandent species of *Compositae*.

Funis pinguis Rumph. Herb. Amb. 5: 83.

Hasskarl thought this was a species of *Euphorbiaceae*. The description is not sufficiently definite to warrant a guess as to its identity.

Blitum brasilianum Rumph. Herb. Amb. 5: 233.

The brief discussion probably applies to a species of *Amaran-thus*.

Herba timoris Rumph. Herb. Amb. 5: 462.

This small herb is not determinable from the brief description given by Rumphius. Hasskarl, Neue Schlüssel (1866) 147, placed it under *Callitriche verna* Linn., to which it cannot possibly be referred. Whatever else it may be, it cannot be a *Callitriche*.

Aylilin Rumph. Herb. Amb. 6: 34.

Undeterminable from the brief description given by Rumphius. It has nothing to do with the other plant described in this chapter, *Ophiocolla altera*, which is *Pseuderanthemum curtatum* Merr.

Radix etter Rumph. Herb. Amb. 7: 6, t. 4.

The description is inadequate, while the figure presents only a leafy branch and the roots. It may possibly be a species of *Connarus*. The plant was not from Amboina, but from Timor, Etter, and Kisser.

Cortex acris Rumph. Herb. Amb. 7: 9.

A tree, the flowers and fruits not described. The plant was from Ceram, there known as *sapela* and *appacau*, from which it may later be possible to determine the status of the plant described.

Camean Rumph. Herb. Amb. 7: 14, t. 8, f. 1.

This possibly belongs to the *Sapindaceae*; Teysmann, quoted by Hasskarl, Neue Schlüssel (1866) 186, placed it in *Evodia*, where it can scarcely belong. The tree was known in Amboina as *camean*.

Ay assa Rumph. Herb. Amb. 7: 20.

The description is suggestive of the Sapindaceae, but is scarcely definite enough to warrant a reduction of Ay assa at the present time. It has been referred to Tetracera assa DC., and in fact the specific name of that species seems to have been derived from Ay assa Rumph. It has, however, nothing whatever to do with Tetracera, the description not applying in any particular. It may prove to be an Evodia, of the Rutaceae.

Lignum vinosum Rumph. Herb. Amb. 7: 21.

The material that Rumphius had was from Rotte, an island southeast of Timor, the plant there being known as *caju larat* or *caju laro*. The only possible way of determining its status is through the native name and uses of the plant. The plant itself is not described, the data given by Rumphius applying chiefly to its uses.

Pangel boaja Rumph. Herb. Amb. 7: 22.

The material was from Bali. Undeterminable from the data given by Rumphius.

Stercus squillarum Rumph. Herb. Amb. 7: 22.

The status of this plant cannot be determined from the data given by Rumphius. A further exploration of Amboina may yield material by which it can be determined.

Nanium calapparium Rumph. Herb. Amb. 7: 55, t. 23, f. 2.

The figure presents only a leafy branch, the drawing being rather crude. There is nothing in the description by which the proper place of the plant described can be determined.

Malum aruanum Rumph. Herb. Amb. 7: 55, t. 24, f. 1.

This plant was from the Aru Islands, there known as *caim gulur*. It should be readily determined from a study of botanical material from that region, as from the description it must be a very characteristic species. The figure is very crude and presents only a branchlet with four alternate, oblong leaves. Hasskarl, Neue Schlüssel (1866) 191, suggested that it might be a *Hydnocarpus*.

Caju gora aruana Rumph. Herb. Amb. 7: 56, t. 24, f. 2.

There is no description, and the figure, which is very crude, presents only a leafy branchlet. Teysmann, quoted by Hasskarl, thought that it might be a species of *Uvaria*. There is no reason for considering that this suggested reduction is correct.

Scrotum cussi Rumph. Herb. Amb. 7: 59, t. 26, f. 2.

The status of this plant probably can be determined when it is once collected in Amboina, as the figure is fairly good, and the description is ample. Hasskarl, Neue Schlüssel (1866) 192, thought that it might belong in the *Apocynaceae*, a reduction that I consider to be an impossible one from the data given by Rumphius.

SEQUENCE OF SPECIES IN RUMPHIUS'S HERBARIUM AMBOINENSE WITH THEIR BINOMIAL EQUIVALENTS

This list of Rumphian species is presented in order to make the present work more complete in itself. The list is arranged as the names appear in the Herbarium Amboinense, with the page and the plate references added, with also the binomial equivalent for each species as determined in the preceding systematic enumeration. The Rumphian names are in general those used by Hasskarl, but I have not thought it necessary to give the native names, which are often included by Rumphius in his designations.

VOLUME I

Palma indica major: calappa 1-25, t. t-3=Cocos nucifera Linn. (Palmae). Pinanga (incl. alba et nigra) 26, t. t=Areca catechu Linn. (Palmae).

Pinanga calapparia 28=Actinorhytis calapparia H. Wendl. & Drude (Palmae).

Pinanga silvestris globosa 38, t. 5, f. 1=Calyptrocalyx spicatus Blume (Palmae).

Pinanga silvestris glandiformis I 38, t. 6=Areca glandiformis Lam. (Palmae).

Pinanga silvestris glandiformis II 39=Pinanga sp. (Palmae).

Pinanga silvestris oryzaeformis 40, t. 5, f. 2=Pinanga globulifera Merr. (Palmae).

Pinanga silvestris e Buro 41=Mischophloeus paniculata Scheff. (Palmae). Pinanga silvestris saxatilis 42, t. 7=Drymophloeus sp. (Palmae).

Saribus 42, t. 8=Livistona rotundifolia Mart. (Palmae).

Licuala arbor 44, t. 9 = Licuala rumphii Blume (Palmae).

Lontarus domestica 45, t. 10=Borassus flabellifer Linn. (Palmae).

Lontaro simile lignum 52=Eusideroxylon zwageri T. & B. (Lauraceae).

Lontarus silvestris I 53, t. 11=Corypha utan Lam. (Palmae).

Lontarus silvestris e Philipp. 54=Corypha elata Roxb. (Palmae).

Lontarus silvestris s. cabang 55 = Corypha gebanga Blume (=C. elata Roxb.?) (Palmae).

Lontarus silvestris altera 56, t. 12=Pholidocarpus ihur Blume (Palmae). Palma indica vinaria 57, t. 13=Arenga pinnata Merr. (Palmae).

Arbor tsjang 63 = Livistona sp. (Palmae).

Saguaster major 64, t. 14=Caryota rumphiana Mart. (Palmae).

Saguaster minor 67, t. 15=Saguaster olivaeformis Mart. (Palmae).

Sargile 68=Drymophloeus appendiculatus Becc. (Palmae).

Nypa 69, t. 16=Nipa fruticans Wurmb (Palmae).

Sagus genuina 72, 75, t. 17, 18=Metroxylon sagu Rottb. (Palmae).

Sagus genuina II $75 = Metroxylon \ micranthum \ Mart. (=? M. \ sagu \ Rottb.)$ (Palmae).

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Sagus silvestris 75 = Metroxylon silvestre Mart. (=? M. sagu Rottb.) (Palmae).
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Sagus longispinus $75=Metroxylon\ longispinum\ Mart.\ (=?\ M.\ sagu\ Rottb.)$ (Palmae).

Sagus laevis 76=Metroxylon laevis Mart. (=? M. sagu Rottb.) (Palmae).

Sagus filarius 84, t. 19=Pigafettia filifera Merr. (Palmae).

Wanga $85 = Pigafettia\ elata\ H.\ Wendl.\ (Palmae)$.

Bissula 85 = Livistona ? bissula Mart. (Palmae).

Olus calappoides 86, t. 22, 23 = Cycas rumphii Miq. (Cycadaceae).

Olus calappoides II e Celebes 87, t. 20, 21 = Cycas rumphii Miq. (Cycadaceae).

Arbor calappoides sinensis 92, t. 24=Cycas revoluta Thunb. (Cycadaceae). Manga domestica (incl. 1, 2, 3, 6) 93, t. 25, 26=Mangifera indica Linn. (Anacardiaceae).

Manga domestica 4 minor $94=Mangifera\ minor\ Blume\ (Anacardiaceae)$.

Manga domestica 5 simiarum $94=Mangifera\ laurina$ Blume (Anacardiaceae).

Manga silvestris 97, t. 27=Mangifera utana Ham. (Anacardiaceae).

Manga silvestris e Banda 98=Mangifera tapia Ham. (Anacardiaceae).

Manga foetida 98, t. 28=Mangifera foetida Lour. (Anacardiaceae).

Manga foetida II s. wani 99=Mangifera caesia Jack (Anacardiaceae). Durio 99, t. 29=Durio zibethinus Murr. (Bombacaceae).

Saccus arboreus major 104, t. 30=Artocarpus integra (Thunb.) Merr. (Moraceae).

Saccus arboreus minor 107, t. 31=Artocarpus champeden Spreng. (Moraceae).

Caju bandaa 109 Artocarpus sp. (Moraceae).

Soccus lanosus 110, t. 32=Artocarpus communis Forst. (Moraceae).

Soccus granosus 112, t. 33=Artocarpus communis Forst. (Moraceae).

Soccus silvestris 114, t. 34=Artocarpus elastica Reinw. (Moraceae).

Soccus silvestris II 115=Artocarpus sp. (Moraceae).

Prunum stellatum 115, t. 35=Averrhoa carambola Linn. (Oxalidaceae).

Blimbingum teres 118, t. 36=Averrhoa bilimbi Linn. (Oxalidaceae).

Jambosa domestica 121, t. 37=Eugenia malaccensis Linn. (Myrtaceae).

Jambosa domestica II minor 122=Eugenia malaccensis Linn. (Myrtaceae).

Jambosa domestica rosacea 122=Eugenia malaccensis Linn. (Myrtaceae).

Jambosa domestica calapparia 122=Eugenia malaccensis Linn. (Myrtaceae).

Jambosa rosacea 123 = Eugenia jambos Linn. (Myrtaceae).

Jambosa nigra 125, t. 38, f. 1=Eugenia malaccensis Linn. (Myrtaceae).

Jambosa aquea 126, t. 38, f. 2=Eugenia aquea Burm. f. (Myrtaceae).

Jambosa silvestris alba 127, t. 39=Eugenia sp. aff. jambos Linn. (Myrtaceae).

Jambosa silvestris parvifolia 129, vol. 2: $t.~40~^*{\equiv}Eugenia~javanica$ Lam. (Myrtaceae).

Jambosa silvestris ayer utan 129=Eugenia stipularis Miq. (Myrtaceae). Jambosa ceramica 130, t. 41=Eugenia cumini Merr. (Myrtaceae).

Jambolana 131, t. 42=Eugenia cumini Merr. (Myrtaceae).

Mangostana 132, t. 43=Garcinia mangostana Linn. (Guttiferae). Mangostana celebica 134, t. 44=Garcinia celebica Linn. (Guttiferae).

^{*} Plate 40 is interchanged between Volumes I and II.

Arbor mundo 135=Garcinia dulcis Kurz (Guttiferae).

Anona 135, t. 45=Annona reticulata Linn. (Annonaceae).

Khi 137=Diospyros kaki Linn. (Ebenaceae).

Anona tuberosa 138, t. 46=Annona squamosa Linn. (Annonaceae).

Cujavus domestica 140, t. 47=Psidium guajava Linn. (Myrtaceae).

Cujavus agrestis 142, t. 48=Psidium guajava Linn. (Myrtaceae).

Cujavus silvestris 143=Psidium guajava Linn. (Myrtaceae).

Cujavillus 145, t. 49=Psidium cujavillus Burm. f. (Myrtaceae).

Papaja mas et femina 145, t. 50, 51 = Carica papaya Linn. (Caricaceae).

Papaja silvestris 149, t. 53, f. 1=Polyscias nodosa Seem. (Araliaceae).

Papaja silvestris minor 150, t. 53, f. 2=Jagera serrata Radlk. (Sapindaceae).

Papaja litorea 150, t. 52=Schefflera sp. (Brassaia littorea Seem.!) (Araliaceae).

Lansium 151, t. 54=Lansium domesticum Correa (Meliaceae).

Lansium silvestre 153, t. 55=Aglaia silvestris Merr. (Meliaceae).

Lansium montanum 154, t. 56=Aglaia sp. (Meliaceae).

Cussambium 154, t. 57=Schleichera oleosa (Lour.) Merr. (Sapindaceae).

Linkeng 157=Euphoria longana Lam. (Sapindaceae).

Pomum draconum 157, t. 58=Dracontomelum mangiferum Blume (Anacardiaceae).

Pomum draconum silvestre 159, t. 59=Dracontomelum silvestre Blume (Anacardiaceae).

Condondum 161, t. 60=Spondias dulcis Forst. (Anacardiaceae).

Condondum malaccense 162, t. 61 = Spondias pinnata Kurz (Anacardiaceae).

Cynomorium 163, t. $62 = Cynometra\ cauliflora\ Linn.\ (Leguminosae)$.

Cynomorium silvestre 167, t. 63=Cynometra ramiflora Linn. (Leguminosae).

Sandoricum domesticum 167, t. 64=Sandoricum koetjape Merr. (Meliaceae).

Gajanus 170, t. 65 = Inocarpus edulis Forst. (Leguminosae).

Atunus 171, t. 66=Parinarium glaberrimum Hassk. (Rosaceae).

Vidoricum domesticum 173 = Garcinia sp. (Guttiferae).

Vidoricum silvestre 173, t. 67=Meliaceae indet.

Catappa domestica 175, t. 68=Terminalia catappa Linn. (Combretaceae).

Catappa silvestris litorea 173=Terminalia catappa Linn. (Combretaceae).

Catappa silvestris altera 175=Terminalia catappa Linn. (Combretaceae).

Cassuvium 177, t. 69=Anacardium occidentale Linn. (Anacardiaceae).

Cassuvium silvestre 179, t. 70=Semecarpus cassuvium Roxb. (Anacardiaceae).

Cassuvium silvestre p. p. (e Ternate) 180=Semecarpus forstenii Blume (Anacardiaceae).

Gnemon domestica mas 181, $t. 72 = Gnetum \ gnemon \ Linn. \ (Gnetaceae)$.

Gnemon domestica femina 181, t. 71=Gnetum gnemon Linn. (Gnetaceae).

Gnemon silvestris 183, t. 73 = Gnetum gnemon Linn. (Gnetaceae).

Morunga (incl. mas et femina) 185, t. 74, 75=Moringa oleifera Lam. (Moringaceae).

Turia 188, t. 76=Sesbania grandiflora Pers. (Leguminosae).

Turia minor 190, t. 77=Sesbania grandiflora Pers. (Leguminosae).

Olus album domesticum 191, t. 78=Pisonia alba Span. (Nyctaginaceae).

Olus album insulare 193, t. 79, f. 1=Pisonia grandis R. Br. (Nyctaginaceae).

Sajor volubilis 194, t. 79, f. 2=Pluckenetia volubilis Sm. (Euphorbiaceae). Eriophorus javana 194, t. 80=Ceiba pentandra Gaertn. (Bombacaceae).

Bilacus 197, t. 81=Aegle marmelos Correa (Rutaceae).

Bilacus taurinus 199=Aegle marmelos Correa (Rutaceae).

Bilacus amboinensis silvestris 200, t. 82=? (sub Aegle, Rutaceae).

VOLUME II

Caryophyllum 1, t. 1=Eugenia caryophyllata Thunb. (Myrtaceae).

Caryophyllum regium 10, t. 2=Eugenia caryophyllata Thunb. (Myrtaceae).

Caryophyllum silvestre 12, t. 3=Eugenia caryophyllata Thunb. (Myrtaceae).

Caryophyllum silvestre 12, t. 3=Eugenia caryophyllata Thunb. (Myrtaceae).

Nux myristica 14, t. 4=Myristica fragrans Houtt. (Myristicaceae).

Nux myristica mas 24, t. 5=Myristica fatua Houtt. (Myristicaceae).

Palala secunda 26, t. 6=Horsfieldia sylvestris Warb. (Myristicaceae).

Palala tertia 27, t. 7=Horsfieldia sp. (Myristicaceae).

Palala quarta 27, t. 8=Horsfieldia canariformis Merr. (Myristicaceae).

Palala quinta 28, t. 9=Gymnacranthera zippeliana Warb. (Myristicaceae).

Palala sexta 28=Knema tomentella Warb. (Myristicaceae).

Agallochum s. calambac $29 = Aquilaria \ agallocha \ Roxb. \ (Thymelaeaceae)$.

Agallochum secundarium coinamense 34=Aquilaria malaccensis Lam. (Thymelaeaceae).

Agallochum secundarium malaicense 35, t.~10=Aquilaria~malaccensis Lam. (Thymelaeaceae).

Agallochum spurium 40=Gonystylus bancanus Baill. (Gonystylaceae).

Agallochum spurium album 40=? (sub Gonystylus, Gonystylaceae).

Agallochum spurium III 41=Excoecaria agallocha Linn. (Euphorbiaceae). Lignum moschatum 41=?

Sandalum 42, t. 11=Santalum album Linn. (Santalaceae).

Sandalum rubrum 47=Pterocarpus santalinus Linn. (Leguminosae).

Lignum tsjidji 50=?

Pseudo-sandalum amboinense 54, t. 12=Osmoxylon umbelliferum Merr. (Araliaceae).

Pseudo-sandalum buronense 55=?

Lignum papuanum 57=? Altingia excelsa Noronha (Hamamelidaceae).

Lignum papuanum II 58=? (sub Altingia excelsa Noronha).

Lignum papuanum III 58=?

Caju galedupa 59, t. 13=Sindora galedupa Prain (Leguminosae).

Cortex oninius 62=Massoia aromatica Becc. (Lauraceae).

Cortex oninius II 62= ? Massoia aromatica Becc. (Lauraceae).

Cortex caryophylloides albus 65, t. 14=Cinnamomum culilawan Blume (Lauraceae).

Cortex caryophylloides ruber 66 = Cinnamomum culilawan Blume var. rubrum Blume (Lauraceae).

Culitlawan ex Papuanis insulis 66=Cinnamomum xanthoneurum Blume (Lauraceae).

Sintoc 69=Cinnamomum javanicum Blume (Lauraceae).

Lauraster amboinensis maxima 70, t. 15=Cryptocarya sp. (Lauraceae).

Lauraster amboinensis minor 70=? Cryptocarya sp. (Lauraceae).

Arbor alba major 72, t. 16, 17, f. 1=Melaleuca leucadendra Linn. (Myrtaceae).

Caju-kelam 74=Melaleuca leucadendra Linn. (Myrtaceae).

Arbor koring 74=? Dipterocarpus sp. (Dipterocarpaceae).

Arbor alba minor 76, t. 17, f. $2=Melaleuca\ leucadendra\ Linn.\ (Myrtaceae)$. Myrtus amboinensis 77, t. $18=Leptospermum\ flavescens\ Sm.\ (Myrtaceae)$.

Pigmentaria 79, t. 19=Bixa orellana Linn. (Bixaceae)

Alliaria 81, t. 20=Dysoxylum euphlebium Merr. (Meliaceae).

Cassia fistula 83, t. 21=Cassia fistula Linn. (Leguminosae).

Canna fistula javanica 86 = Cassia javanica Linn. (Leguminosae).

Cassia fistula silvestris 88, t. 22=Cassia javanica Linn. (Leguminosae).

Andawas 89 = Wrightia sp. (Apocynaceae).

Bilalangh 89=? Leguminosae.

Ke ule 89=? Leguminosae.

Tamarindus 90, t. 23 = Tamarindus indica Linn. (Leguminosae).

Tamarindus altera 93=Dialum indum Linn. (Leguminosae).

Malum granatum 94, t. 24, f. 1=Punica granatum Linn. (Punicaceae).

Limo decumanus 96, t. 24, f. $2 = Citrus \ maxima \ Merr. \ (Rutaceae)$.

Malum citrium 99, t. 25=Citrus sp. (Rutaceae).

Limo tuberosus 101, t. 26, f. $1 = Citrus \ hystrix \ DC. \ (Rutaceae)$.

Limo ventricosus 102, t. 26, f. 2 = Citrus sp. (Rutaceae).

Limo unquentarius $103 = Citrus \ hystrix \ DC. \ (Rutaceae)$.

Limo agrestis 104, t. 27=Citrus hystrix DC. (Rutaceae).

Limo taurinus 105=Citrus bergamia Risso (Rutaceae).

Limo ferus 106, t. 26, f. 3, t. 28 = Citrus obversa Hassk. (Rutaceae).

Limonellus 107, t. 29=Citrus aurantifolia Swingle (Rutaceae).

Limonellus fructu acutissimo 108, t. 29, f. A=Citrus sp. (Rutaceae).

Limonellus aurarius 109, t. 30=Citrus sp. (Rutaceae).

Limonellus madurensis 110, t. 31=Fortunella japonica Swingle (Rutaceae).

Limonellus angulosus 110, t. 32=Merope angulata Swingle (Rutaceae).

Aurantium acidum I t. 33=Citrus aurantium Linn. (Rutaceae).

Aurantium acidum II 112=Citrus aurantium Linn. (Rutaceae).

Aurantium acidum III 112=Citrus aurantium Linn. (Rutaceae).

Aurantium sinense 113, t. 34=Citrus nobilis Lour. (Rutaceae).

Aurantium sinense II 113=Citrus nobilis Lour. (Rutaceae).

Aurantium verrucosum 115, t. 35=Citrus sp. (Rutaceae).

Aurantium verrucosum e Banda 116 = Citrus sp. (Rutaceae).

Aurantium pumilum madurense 116 = Citrus sp. (Rutaceae).

Malum indicum 117, t. 36 = Zizyphus jujuba Lam. (Rhamnaceae).

Vidara littorea 119, t. 37=Ximenia americana Linn. (Olacaceae).

Lignum colubrinum timorense 121, t. 38=Strychnos muricata Kostel. (Loganiaceae).

Radix deiparae 124, t. 39 = Gmelina villosa Roxb. (Verbenaceae).

Radix deiparae spuria 125, Vol. 1: t. 40 *=Gmelina villosa Roxb. (Verbenaceae).

Rex amaroris 129, t. 41=Soulamea amara Lam. (Simarubaceae).

Anisum moluccanum 132, t. 42=Fagara avicennae DC. (Rutaceae).

Anisifolium 133, t. 43=Feronia limonia Swingle (Rutaceae).

Saponaria 134=Sapindus rarak DC. (Sapindaceae).

Pharmacum sagueri 136, t. 44=Garcinia picrorhiza Miq. (Guttiferae).

Pharmacum limonicum 137, t. 44, f. B=Garcinia picrorhiza Miq. var. limonorhiza Boerl. (Guttiferae).

Capraria 139=Garuga abilo Merr. (Burseraceae).

Songium 140, t. 45=Dillenia elliptica Thunb. (Dilleniaceae).

^{*} Plate 40 is interchanged between Volumes I and II.

Sangius mas et femina 142, t. 46=Dillenia serrata Thunb. (Dilleniaceae).

Canarium vulgare 145, 146, t. 47=Canarium commune Linn. (Burseraceae). Canarium vulgare majus rotundum 146, t. 47, f. E=Canarium commune

Linn., var. (Burseraceae). Canarium vulgare parvum oblongum 146, t. 47, f. F=Canarium commune

Canarium vulgare parvum oblongum 146, t. 47, f. F = Canarium commune Linn., var. (Burseraceae).

Canarium vulgare parvum rotundum 146, t. 47, f. G=Canarium commune Linn., var. (Burseraceae).

Canarium zephyrinum 151, t. 48=Canarium zephyrinum Blume (Burseraceae).

Arbor zeylanica 153=Canarium zeylanicum Blume (Burseraceae).

Canarium sinense I 154=Canarium pimela Koenig (Burseraceae).

Canarium sinense II 154=Canarium album Räusch (Burseraceae).

Canarium sinense III 154=Pimela caryophyllacea Blume=Canarium sp. (Burseraceae).

Canarium silvestre II 155, t. 49=Canarium sylvestre Gaertn. (Burseraceae.)

Canarium odoriferum leve 156, t. 50=Canarium balsamiferum Willd. (Burseraceae.)

Canarium odoriferum leve, var. 156=Canarium sp. (Canariopsis paucijuga Miq.) (Burseraceae).

Canarium odoriferum hirsutum 157, t. 51=Canarium hirsutum Willd. (Burseraceae).

Dammara nigra 160, t. 52=Canarium acutifolium Merr. (Burseraceae).

Dammara nigra II femina 161 = Canarium sp. (Burseraceae).

Dammara nigra legitima 162, t. 53=Canarium legitimum Blume (Burseraceae).

Nanarium minimum s. oleosum 162, t. 54=Canarium oleosum Engl. (Burseraceae).

Canarium decumanum 166, t. 55=Canarium decumanum Gaertn. (Burseraceae).

Dammara selanica mas 168, t. 56=Shorea selanica Blume (Dipterocarpaceae).

Dammara selanica femina 169=Shorea selanica Blume var. latifolia Blume (Dipterocarpaceae).

Dammara leucomelaena 172=?

Dammara alba 174, t. 57=Agathis alba Foxw. (Pinaceae).

Dammara alba mas 174=Agathis alba Foxw. (Pinaceae).

Dammara alba femina 175=Agathis alba Foxw. (Pinaceae).

Dammara alba regia 178=Agathis alba Foxw. (Pinaceae).

Dammara celebica 179=Agathis alba Foxw. (Pinaceae).

Camirium 180, t. 58=Aleurites moluccana Willd. (Euphorbiaceae).

Pangium 182, t. 59=Pangium edule Reinw. (Flacourtiaceae).

Fructus musculiformis 184, t. 60=Neuburgia musculiformis Miq. (Apocynaceae).

Ampacus latifolia 186, t. 61=Evodia latifolia DC. (Rutaceae).

Ampacus angustifolia 188, t. 62=Evodia amboinensis Merr. (Rutaceae).

Ampacus litorea I 188=Allophyllus timorensis Blume (Sapindaceae).

Ampacus litorea angustifolia minor 189=Allophyllus ternatus Radlk. (Sapindaceae).

Flos cuspidum 189, t. 63=Mimusops elengi Linn. (Sapotaceae).

Tanjonus litorea 193, t. 64=Minusops parvifolia R. Br. (Sapotaceae).

Cananga 195, t. 65=Canangium odoratum Baill. (Annonaceae).

Cananga silvestris I 197, t. 66, f. 1=Goniothalamus sp. (Annonaceae).

Cananga silvestris II 198, t. 66, f. 2=Polyalthia sp. (Uvaria ligularis Lam.) (Annonaceae).

Cananga silvestris III latifolia 198=Melodorum latifolium Hook. f. & Th. (Annonaceae).

Sampacca 199, t. 67=Michelia champaca Linn. (Magnoliaceae).

Sampacca II parvifolia 200=Michelia parvifolia DC.=Michelia champaca Linn. (Magnoliaceae).

Sampacca III coerulea 200=Michelia coerulea DC.=M. champaca Linn. (Magnoliaceae).

Sampacca IV alba 200=Michelia alba DC. (Magnoliaceae).

Sampacca silvestris 202, t. 68=Michelia tsiampaca Linn. (Magnoliaceae).

Sampacca silvestris luteo-viridis 202=Michelia tsiampaca Linn. (Magnoliaceae).

Arbor violaria 203=? (sub Talauma, Magnoliaceae).

Sampacca montana 204, t. 69=Talauma rumphii Blume (Magnoliaceae).

Lingoum rubrum 205, t. 70=Pterocarpus indicus Willd. (Leguminosae).

Lingoum II album 206=Pterocarpus indicus Willd. (Leguminosae).

Lingoum III rubrum 209=Pterocarpus indicus Willd. (Leguminosae).

Lingoum saxatile 210=Pterocarpus indicus Willd. (Leguminosae).

Lingoum saxatile (e Ceram) 210=? Pterocarpus papuanus F. Muell. (Leguminosae).

Bintangor maritima 211, t. 71=Calophyllum inophyllum Linn. (Guttiferae).

Bintangor silvestris 216, t. 72=Calophyllum soulattri Burm. f. (Guttiferae).

Bintangor montana II 217=Calophyllum soulattri Burm. f. (Guttiferae).

Bintangor montana III 217=Calophyllum sp. (Guttiferae).

Novella 218, t. 73=Hibiscus tiliaceus Linn. (Malvaceae).

Novella repens 222, t. 73, f. A=Hibiscus tiliaceus Linn. (Malvaceae).

Novella rubra 223=Hibiscus tiliaceus Linn. (Malvaceae).

Novella litorea 224, t. 74=Thespesia populnea Corr. (Malvaceae).

Novella nigra 226, t. 75=Cordia subcordata Lam. (Boraginaceae).

Novella cinerea 227=? Artocarpus sp. (Moraceae).

Gelala litorea 230, t. 76=Erythrina variegata Linn. var. orientalis Merr. (Leguminosae).

Gelala litorea (e Java et e China) 232, 232=? Erythrina variegata Linn. var. orientalis Merr. (Leguminosae).

Gelala alba 234, t. 77=Erythrina variegata Linn. (Leguminosae).

Gelala alba (e Java) 234=Erythrina variegata Linn. (Leguminosae).

Gelala aquatica 235, t. 78=Erythrina fusca Lour. (Leguminosae).

Arbor excoecans 237, t. 79, 80=Excoecaria agallocha Linn. (Euphorbiaceae).

Arbor excoecans II variegata 239 = Excoecaria agallocha Linn. (Euphorbiaceae).

Arbor lactaria 243, t. 81 = Cerbera manghas Linn. (Apocynaceae).

Lignum scholare 246, t. 82=Alstonia scholaris (Linn.) R. Br. (Apocynaceae).

Arbor bindaus 248=?

Arbor pinguis 249, t. 83=Pimeleodendron amboinicum Hassk. (Euphorbiaceae).

Gutta cambodja 251 = Garcinia cambogia Desr. (Guttiferae).

Lactaria salubris 255, t. 84=Ochrosia oppositifolia K. Sch. (Apocynaceae).

Arbor regis 257, t. 85=Endospermum moluccanum Becc. (Euphorbiaceae).

Arbor vernicis 259, t. 86=Gluta benghas Linn. (Anacardiaceae).

Arbor toxicaria 263, t. 87=Antiaris toxicaria Lesch. (Moraceae).

Arbor toxicaria femina 264=Antiaris toxicaria Lesch. (Moraceae).

VOLUME III

Ebenus 1, t. 1=Maba buxifolia Pers. (Ebenaceae).

Upas alterum 264=Strychnos sp. (Loganiaceae).

Ebenus e Madagascar 6=? Maba sp. (Ebenaceae).

Ebenus molucca 6, t. 2=Diospyros maritima Blume (Ebenaceae).

Ebenus alba 8, t. 3 = ? Diospyros sp. (Ebenaceae).

Arbor nigra parvifolia 10, 11, t. 4, f. 2, t. 5=Polyalthia sp. (Annonaceae).

Arbor nigra latifolia 10=? Polyalthia sp. (Annonaceae).

Arbor nigra maculosa 12, t. 4, f. 1=? Polyalthia sp. (Annonaceae).

Hebenaster 13, t. 6 = Diospyros ebeneum Koen. (Ebenaceae).

Hebenaster amalyensis 15 = Diospyros sp. (Ebenaceae).

Metrosideros vera parvifolia 16, t. 7 = Metrosideros vera Roxb. (Myrtaceae).

Metrosideros vera latifolia 16=Metrosideros vera Roxb. (Myrtaceae).

Jamtsia 17=?

Metrosideros macassarensis 19, t. 8=Mimusops kauki Linn. (Sapotaceae).

Nani hua 21, t. 9=Baccaurea nanihua Merr. (Euphorbiaceae).

Metrosideros amboinensis mas 21, t. 10=Intsia bijuga O. Kuntze (Leguminosae).

Metrosideros amboinensis femina 22=? Intsia sp. (Leguminosae).

Metrosideros molucca mas 25, t. 11=Homalium foetidum Benth. (Flacourtiaceae).

Metrosideros molucca femina 25, t. 12=?

Metrosideros molucca fungosa 25=Harpullia arborea (Blanco) Radlk. (Sapindaceae).

Metrosideros spuria I mas 26, t. 13, f. A=Artocarpus fretissii T. & B. (Moraceae).

Metrosideros spuria II femina 27, t. 13, f. B=Artocarpus sp. (Moraceae).

Coffassus mas 28, t. 14, f. A=Vitex cofassus Reinw. (Verbenaceae).

Coffassus albus (et femina) 28=Vitex cofassus Reinw. (Verbenaceae).

Cofassus citrina 30, t. 15=Alstonia subsessilis Miq. (Apocynaceae).

Dabanus lapidea 31, t. 17=Pometia pinnata Forst. (Sapindaceae).

Dabanus Tapluea 31, v. 17 = 1 ometru primutu 1015t. (Suprimuteue)

Dabanus rubra 32, t. 16=Pometia pinnata Forst. (Sapindaceae).

Dabanus mollis 32=Pometia pinnata Forst. (Sapindaceae).

Jatus 34, t. 18 = Tectona grandis Linn. f. (Verbenaceae).

Samama 36, t. 19=Anthocephalus macrophyllus Havil. (Rubiaceae).

Tittius rubra 38, t. 20=Vitex moluccana Blume (Verbenaceae).

Tittius alba 38=Vitex moluccana Blume (Verbenaceae).

Tittius litorea $39 = Guettarda \ speciosa \ Linn. \ (Rubiaceae)$.

Sicchius I mas 40, t. 21=? Palaquium sp. (Sapotaceae).

Sicchius II femina 41, t. 22=? Sideroxylon sp. (Sapotaceae).

Sicchius III intermedia 41=?

Ulassium mas 42, t. 23=Adina fagifolia Valeton (Rubiaceae).

Ulassium femina 42=? Adina sp. (Rubiaceae).

Ulassium lapideum 43=? Adina sp. (Rubiaceae).

Laharus lapideus (incl. femina et mixta) 44, t. 24=Neonauclea moluccana Merr. (Rubiaceae).

Nessatus 45, t. 25=Neonauclea sp. (Rubiaceae). Morfalla 46=? Lignum emanum 47, t. 26=Podocarpus rumphii Blume (Taxaceae). Corius mas et femina 48, t. 27=? (cf. Sapotaceae). Lignum murinum majus 50, t. 28=Albizzia procera Benth. (Leguminosae). Lignum murinum minus 50 = Albizzia sp. (Leguminosae). Lignum murinum parvifolium 51=Albizzia sp. (Leguminosae). Arbor pete 51=Parkia speciosa Hassk. (Leguminosae). Caju ticcos leytimorensis 52=? Albizzia procera Benth. (Leguminosae). Carbonaria mas 52, t. 29=? (cf. Elaeocarpus, Elaeocarpaceae). Carbonaria femina 53=? Frutex carbonarius 53=? Carbonaria altera 54=? Carbonaria litorea 55=? Lignum corneum 55, t. 30 = Garcinia cornea Linn. (Guttiferae). **Lignum corneum angustifolium** 56 = Garcinia sp. (Guttiferae). Mangium silvestre 57, t. 31=? (cf. Buchanania, Anacardiaceae). Folium acidum majus 58, t. 32=Garcinia amboinensis Spreng. (Guttiferae.) Folium acidum minus 60, t. 33=? Garcinia ceramica Boerl. (Guttiferae). Lignum salis minus 61=? Ulet 62, t. 34=Taxotrophis ilicifolia Vid. (Moraceae). Lignum eurinum 63, t. 35=Sideroxylon sp. (Sapotaceae). Sirifolia 64, t. 36=Celtis philippensis Blanco (Ulmaceae). Sirifolia litorea 65, t. 37=Celtis philippensis Blanco (Ulmaceae). Arupa alba 66, t. 38=Payena leerii Kurz (Sapotaceae). Arupa rubra 66=? Payena leerii Kurz (Sapotaceae). Surenus 67, t. 39 = Toona sureni Merr. (Meliaceae). Machilus I mas 68, t. 40, f. A=Litsea sp. (Lauraceae). Machilus II femina 69, t. 40 f. B.=Litsea sp. (Lauraceae). Machilus III media 70, t. 41=Dehaasia media Blume (Lauraceae). Machilus IV minima 70, t. 42=Machilus sp. (Lauraceae). Lignum leve latifolium 71, t. 43=Litsea stickmanii Merr. (Lauraceae). Lignum leve angustifolium 71, t. 44=Litsea sp. (Lauraceae). Lignum leve alterum 72, t. 45=Litsea rumphii F.-Vill. (Lauraceae). Lignum equinum 73, t. 46=Dolichandrone spathacea (Linn. f.) K. Schum. (Bignoniaceae). Arbor rubra 1 74, t. 47=Eugenia sp. (Myrtaceae). Arbor rubra I angustifolia minor 75, t. 48=Eugenia sp. (Myrtaceae). Arbor rubra II 76=Eugenia melastomifolia Merr. (Myrtaceae). Arbor rubra II saxatilis 76=Eugenia sp. (Myrtaceae). Arbor rubra III 76=Eugenia rumphii Merr. (Myrtaceae). Arbor rubra IV 77=Eugenia sp. (Myrtaceae). Arbor facum major 77, t. 49=Sideroxylon microcarpum Burck (Sapotaceae). Caju lape 78, t. 50 = Euonymus sp. (Celastraceae). Lignum salis 79, t. 51 = ?Perticaria ferrea parvifolia 80, t. 52=? Eugenia sp. (Myrtaceae). Perticaria ferrea latifolia 80=? Eugenia sp. (Myrtaceae).

Jambosa litorea 81, t. 53=Eugenia subglauca K. & V. (Myrtaceae).

Jambosa silvestris alba 81 = Eugenia sp. (Myrtaceae).

Arbor noctis 82, t. 54=Nauclea (Sarcocephalus) undulata Roxb. (Rubiaceae).

Bancalus mas 84, t. 55, f. 2=Nauclea (Sarcocephalus) mitragyna Merr. (Rubiaceae).

Bancalus media 84, t. 55, f. $1=Nauclea\ mitragyna\ Merr.\ (Rubiaceae)$.

Quercus molucca 85, t. 56 = Quercus molucca Linn. (Fagaceae).

Quercus molucca II 85=Quercus sp. (Fagaceae).

Casuarina litorea 86, t. 57 = Casuarina equisetifolia Linn. (Casuarinaceae).

Casuarina montana 87, t. 58 = Casuarina rumphiana Miq. (Casuarinaceae).

Casuarina celebica 87, t. 58, f. A = Casuarina sumatrana Miq. (Casuarina ceae).

Arbor nuda 89, t. 59 = Antidesma stipulare Blume (Euphorbiaceae).

Pulassarius arbor 90, t. 60=Lepiniopsis ternatensis Val. (Apocynaceae).

Kowackil 91=?

Granatum litoreum latifolium 92, t. 62=Xylocarpus moluccensis Roem. (Meliaceae).

Granatum litoreum II latissimum 92=Xylocarpus moluccensis Roem. (Meliaceae).

Granatum litoreum III parvifolium 93, t. 61=Xylocarpus granatum Koenig (Meliaceae).

Atunus litorea 95, t. 63=Heritiera litoralis Dry. (Sterculiaceae).

Lignum clavorum 97, t. 64 = Sapotaceae.

Arbor palorum alba parvifolia 98, t. 65=? Lepisanthes sp. (Sapindaceae).

Arbor palorum alba latifolia 99, t. 65, f. A=Mischocarpus fuscescens Blume (Sapindaceae).

Arbor palorum nigra 99, t. 66=?

Vertifolia alba 100=?

Vertifolia rubra 100, t. 67=Perrottetia moluccana Loesen. (Celastraceae).

 $\textbf{Mangium celsum } 102, \ t. \ 68 = Bruguiera \ conjugata \ \textbf{Merr.} \ (Rhizophoraceae).$

Mangium minus 106, t. 69 (excl. fls. et fig. A, B.) = Bruguiera conjugata Merr. (Rhizophoraceae).

Mangium digitatum 107, t. 70=Bruguiera sexangula Poir. (Rhizophoraceae).

Mangium candelarium 108, t. 71, 72=Bruguiera candelaria DC. (Rhizophoraceae.)

Mangium caseolare album 111, t. 73=Sonneratia alba Sm. (Sonneratiaceae).

Mangium caseolare rubrum 112, t. 74, 75=Sonneratia caseolaris Engl. (Sonneratiaceae).

Mangium album 115, t. 76=Avicennia officinalis Linn. (Verbenaceae).

Mangium fruticans I corniculatum 117, t. 77=Aegiceras corniculatum Blanco (Myrsinaceae).

Mangium fruticans II parvifolium 117=Aegiceras floridum R. & S. (Myr-sinaceae).

Mangium caryophylloides I 119, t. 78=Bruguiera cylindrica Blume (Rhizophoraceae).

Mangium caryophylloides II parvifolium 119=Ceriops tagal C. B. Rob. (Rhizophoraceae).

Mangium caryophylloides III latifolium 119=Ceriops tagal C. B. Rob. (Rhizophoraceae).

Mangium ferreum mas 120, t. 79=Pemphis acidula Forst. (Lythraceae).

Mangium ferreum mas 120, t. 79, fig. A, B = Aegiceras floridum R. & S. (Mursinaceae).

Mangium ferreum femina 120=? Aegiceras floridum R. & S. (Myrsinaceae).

Arbor versicolor 122, t. 80=Eucalyptus deglupta Blume (Myrtaceae).

Arbor versicolor s. Caju Sarassa=Eucalyptus sarassa Blume=? E. deglupta Blume (Myrtaceae).

Mangium montanum 123, t. 81=Acacia mangium Willd. (Leguminosae). Umbraculum maris ceramense 124, t. 82=Aegiceras corniculatum Blanco (Myrsinaceae).

Umbraculum maris amboinense 124=Aegiceras corniculatum Blanco (Myrsinaceae).

Mangium floridum 125, t. 83 = Aegiceras floridum R. & S. (Myrsinaceae).

Mangium porcellanicum 126, t. $84=Pemphis \ acidula \ Forst. \ (Lythraceae)$.

Surenus alba 126 = Toona sureni Merr. (Meliaceae).

Surenus rubra 126=Toona sureni Merr. (Meliaceae).

Varinga latifolia 127, t. 84 bis=Ficus altissima Blume (Moraceae).

Varinga repens 134, t. 85=Ficus sp. aff. calophylla Blume (Moraceae).

Varinga supa 135, t. 86=? Ficus forstenii Miq. (Moraceae).

Varinga pelal 135=? Ficus forstenii Mig. (Moraceae).

Grossularia domestica 136, t. 87, 88=Ficus trematocarpa Miq. (Moraceae).

Grossularia domestica, longifolia 136 = Ficus sp. (Moraceae).

Grossularia domestica parvifolia 136 = Ficus sp. (Moraceae).

Varinga funicularis 137=Ficus sp. (Moraceae).

Varinga nounouck 137=Ficus sp. (Moraceae).

Grossularia silvestris 138, t. 89=Ficus sp. (Moraceae).

Varinga parvifolia alta 139, t. 90=Ficus benjamina Linn. (Moraceae).

Varinga parvifolia humilis 140=? Ficus benjamina Linn. (Moraceae).

Arbor eusanda 141=Ficus sp. (Moraceae).

Arbor conciliorum 142, t. 91, 92=Ficus rumphii Blume (Moraceae).

Caprificus amboinensis esculenta latifolia 145, t. 93=Ficus racemifera Roxb. (Moraceae).

Caprificus amboinensis esculenta angustifolia 146=Ficus sp. (Moraceae).

Caprificus amboinensis esculenta silvestris 148=Ficus sp. (Moraceae).

Caprificus s. sycomorus chartaria 149 = Ficus sp. (Moraceae).

Caprificus aspera latifolia 150, t. 94=Ficus wassa Roxb. (Moraceae).

Caprificus aspera II angustifolia 151=Ficus wassa Roxb. (Moraceae).

Caprificus aspera III glabra 151=Ficus moseleyana King (Moraceae).

Caprificus viridis major 152, t. 95=Ficus conora King (Moraceae).

Caprificus viridis minor 152=Ficus adenosperma Mig. (Moraceae).

Ficus septica 153, t. 96=Ficus septica Burm. f. (Moraceae).

Ficus septica silvestris 153=Ficus sp. (Moraceae).

Ficus septica angustifolia 154=Ficus sp. (Moraceae).

Arbor glutinosa 155, t. 97=Cordia myxa Linn. (Boraginaceae).

Bancudus angustifolia 157, t. 98=Morinda bracteata Roxb. (Rubiaceae).

Bancudus latifolia 158, t. 99=Morinda citrifolia Linn. (Rubiaceae).

Morinda latifolia 159=Morinda citrifolia Linn. (Rubiaceae).

Arbor aluminosa 160, t. 100=Symplocos javanica Kurz (Symplocaceae).

Ganitrus 160, t. 101=? Elaeocarpus amboinensis Merr. (Elaeocarpaceae).

Ganitrum oblongum 163, t. 102=? Elaeocarpus oblongus Gaertn. (Elaeocarpaceae).

Ganitrum 163=Elaeocarpus sp. (Elaeocarpaceae).

Lignum momentaneum 164. t. 103=? Elaeocarpus sp. (Elaeocarpaceae).

Arbor rediviva 165, t. 104=Elaeocarpus rumphii Merr. (Elaeocarpaceae).

Fructus bobae 166, t. 105=Stemonurus sp. (Icacinaceae).

Arbor spiculorum latifolia 167 = Actinodaphne moluccana Blume (Lauraceae).

Arbor spiculorum brevifolia 167=? Actinodaphne moluccana Blume (Lauraceae).

Arbor spiculorum aeruginea 167, t. 106=Actinodaphne rumphii Blume (Lauraceae).

Clompanus major 168, t. 107=Sterculia foetida Linn. (Sterculiaceae).

Clompanus minor 169, t. 107 bis=Sterculia treubii Hochr. (Sterculiaceae).

Clompanus ternatensis femina 170 = Sterculia sp. (Sterculiaceae).

Clompanus ternatensis mas 170=Sterculia sp. (Sterculiaceae).

Clompanus silvestris 171=? Sterculia sp. (Sterculiaceae).

Folium mappae 172, t. 108=Macaranga mappa Muell.-Arg. (Euphorbiaceae).

Corallaria parvifolia 173, t. 109=Adenanthera pavonina Linn. (Leguminosae).

Corallaria latifolia 175, t.~101 = Ormosia~calavensis~Azaola~(Leguminosae).

Clypearia alba 176, t. 111=Albizzia falcata Backer (Leguminosae).

Clypearia rubra 176, t. 112=Pithecolobium clypearia Benth. (Leguminosae).

Clypearia rubra s. Sye II 177=Albizzia sp. (Leguminosae).

Catti marus 177, t. 113=Kleinhovia hospita Linn. (Sterculiaceae).

Butonica 179, t. 114=Barringtonia asiatica Kurz (Lecythidaceae).

Butonica terrestris rubra 181, $t.\ 115 = Barringtonia\ racemosa\ Blume\ (Lecythidaceae)$.

Butonica terrestris alba 181, t. 116=Barringtonia racemosa Blume (Lecythidaceae).

Olus catappanicum 182=?

Olus catappanicum aliud 182=?

Malaparius 183, t. 117=Pongamia pinnata Merr. (Leguminosae).

Malaparius e Nussanive 184=Pongamia pinnata Merr. (Leguminosae).

Vidoricum silvestre | 184=? Diospyros sp. (Ebenaceae).

Vidoricum silvestre II-IV 184, t. 118=Sapotaceae indet.

Restiaria alba 187, t. 119 = Commersonia bartramia Merr. (Sterculiaceae).

Restiaria nigra 188=Columbia subobovata Hochr. (Tiliaceae).

Perticaria III parvifolia 189, t. 120 = Columbia subobovata Hochr. (Tiliaceae).

Perticaria III latifolia 189=Columbia subobovata Hochr. (Tiliaceae).

Tanarius minor alba 190, t. 121=Macaranga tanarius Muell.-Arg. (Euphorbiaceae).

Tanarius minor rubra 190=Macaranga tanarius Muell.-Arg. (Euphorbiaceae).

Tanarius major 192, t. 122=Schizomeria serrata Hochr. (Cunoniaceae). Tanarius major II 192=?

Arbor ovigera femina 193, t. 123=Hernandia ovigera Linn. (Hernandiaceae).

Arbor ovigera mas 193=Hernandia peltata Meisn. (Hernandiaceae).

Lanius 194, t. 124=Samadera indica Gaertn. (Simarubaceae).

Palacca 195, t. 125=Octomeles sumatrana Miq. (Datiscaceae).

Halecus litorea 196, t. 126=Mallotus tiliifolius Muell.-Arg. (Euphorbiaceae).

Halecus terrestris vulgaris 197, t. 127=Macaranga involucrata Baill. (Euphorbiaceae).

Halecus terrestris alba 198, t. 127 bis=Macaranga involucrata Baill. (Euphorbiaceae).

Halecus rugosa 198=Macaranga hispida Muell.-Arg. (Euphorbiaceae).

Clypearia maritima 199=Albizzia retusa Benth. (Leguminosae).

Solulus arbor 200, t. 128=Ormocarpum orientale Merr. (Leguminosae).

Arbor radulifera 201, t. 129=Flindersia amboinensis Poir. (Rutaceae).

Folium intinctus 202 = Eugenia sp. (Myrtaceae).

Daun parawas 203=?

Lignum muscosum 203, t. 130=Gordonia rumphii Merr. (Theaceae).

Lignum muscosum parvifolium 203=? Gordonia rumphii Merr. (Theaceae). Bunius domestica 204, t. 131=Antidesma bunius Spreng. (Eurphorbiaceae).

Bunius agrestis 204, t. 131, f. A=Antidesma bunius Spreng. (Euphorbiaceae).

Arbor coeli 205, t. 132=Ailanthus integrifolia Lam. (Simarubaceae).

Aalius parvifolia 207=Breynia cernua Muell.-Arg. (Euphorbiaceae).

Folium hircinum 208, t. 133=Premna nitida K. Sch. (Verbenaceae).

Folium hircinum femina 208=Premna nitida K. Sch. (Verbenaceae).

Gumira litorea (silvestris) 209, t. 134=Premna obtusifolia R. Br. (Verbenaceae).

Cicadaria angustifolia 210=? Palaquium sp. (Sapotaceae).

Cicadaria latifolia 210, t. 135=? Palaquium amboinense Burck (Sapotaceae).

Cicadaria zevlanica 210=?

Caryophyllaster albus 211=Decaspermum fruticosum Forst. (Myrtaceae). Caryophyllaster ruber 211, t. 136=Decaspermum fruticosum Forst. (Myrtaceae).

Cortex papetarius 212, t. 137=Weinmannia fraxinea Sm. (Cunoniaceae). Ichthyoctonos litorea 213, t. 138=Sapium indicum Willd. (Euphorbiaceae). Ichthyoctonos montana 214, t. 139=Ternstroemia robinsonii Merr. (Theaceae).

Ichthyoctonos litorea silvestris latifolia 214=? Ternstroemia robinsonii Merr. (Theaceae).

Timonius 216, t. 140 = Timonius sericeus K. Sch. (Rubiaceae).

Folium urens latifolium 217, t. 141=Laportea amplissima Miq. (Urticaceae).

Folium urens angustifolium 217=Laportea sp. (Urticaceae).

Folium urens rubrum 218=Laportea sp. (Urticaceae).

Phallus daemonum 218=Dictyophora phalloidea Desv. (Phallineae).

VOLUME IV

Arundarbor tenuis 1, t. 1 (incl. alba, nigra, prava, picta, lineata) = $Bambusa \ atra \ Lindl. \ (Gramineae)$.

Arundarbor tenuis amahussana 3=Bambusa atra Lindl. var. amahussana Merr. (Gramineae).

 $\textbf{Arundarbor cratium } 5 = Schizostachyum \ brachycladum \ Kurz \ (Gramineae).$

Arundarbor spiculorum $7=Bambusa\ longinodis\ Miq.=Schizostachyum\ sp.$ (Gramineae).

Arundarbor vasaria 8=? Bambusa vulgaris Schrad. (Gramineae).

Arundarbor vasaria cho 10=? Bambusa vulgaris Schrad. (Gramineae).

Arundarbor aspera 11, t. 2—Gigantochloa aspera (Schultes) Kurz (Gramineae).

Arundarbor maxima 12=Bambusa excelsa Mig. (Gramineae).

Arundarbor spinosa 14, t. 3=Bambusa spinosa Roxb. (Gramineae).

Arundarbor fera flava 16, t. 4=Bambusa vulgaris Schrad. (Gramineae).

Arundarbor fera silvestris 16, 18=Bambusa sp. (Gramineae).

Arundarbor fera elegantissima 16=Bambusa vulgaris Schrad. var. striata Gamble (Gramineae).

Arundarbor ferae adf. 18=Bambusa sp. (Gramineae).

Arundarbor fera nigra 18=Bambusa sp. (Gramineae).

Arundarbor fera s. cha. 18=Bambusa sp. (Gramineae).

Canna palustris 20, t. 5=Phragmites vulgaris Trin. (Gramineae).

Arundo farcta I 21=Miscanthus sinensis Anders. (Gramineae).

Arundo farcta II 21, t. 6=Miscanthus japonicus Anders. (Gramineae).

Arundastrum 22, t. 7=Donax canniformis K. Sch. (Marantaceae).

Flos festalis (incl. ruber simplex, plenus, albus simplex, flavus plenus) 24, t. 8=Hibiscus rosa sinensis Linn. (Malvaceae).

Flos meutan 26=Paeonia meutan Sims (Ranunculaceae).

Flos horarius 27, t. 9 = Hibiscus mutabilis Linn. (Malvaceae).

Abutilon hirsutum 29, t. 10=Abutilon hirtum Sweet (Malvaceae).

Abutilon laeve 31, t. 11=Abutilon indicum Sweet (Malvaceae).

Abutilon montanum 32=Sida cordifolia Linn. (Malvaceae).

Abutilon litoreum 33=? Abutilon indicum Sweet (Malvaceae).

Gossypium 33, t. 12=Gossypium indicum Lam. (Malvaceae).

Gossypium fl. fusco-rubentibus 34 = Gossypium purpurascens Poir. (Malvaceae).

Gossypium latifolium 37, t. 13=Gossypium brasiliense Macf. (Malvaceae).

Gossypium daemonis 38, t. 14=Abroma fastuosa Jacq. (Sterculiaceae). Granum moschatum 38, t. 15=Abelmoschus moschatus Medik. (Malvaceae).

Granum moschatum agreste 38=Abelmoschus mindanaensis Warb. (Malvaceae).

Herba crinalium domestica 40, t. 16=Hibiscus surattensis Linn. (Malvaceae).

Herba crinalium silvestris 41 = Hibiscus surattensis Linn. (Malvaceae).

Cyprus 42, t. 17=Lawsonia inermis Linn. (Lythraceae).

Lagondium vulgare 48, t. 18=Vitex trifolia Linn. (Verbenaceae).

Lagondium litoreum arborescens 50, t. 19 = Vitex negundo Linn. (Verbenaceae).

Lagondium nigrum 52=? (sub Vitex negundo Linn., Verbenaceae).

Crista pavonis 53, t. 20=Caesalpinia pulcherrima Sw. (Leguminosae).

Soffera 55=Cassia sophera Linn. (Leguminosae).

Lignum sappan 56, t. 21 = Caesalpinia sappan Linn. (Leguminosae).

Anticholerica 60, t. 22=Sophora tomentosa Linn. (Leguminosae).

Flos flavus 63, t. 23 = Cassia glauca Lam. (Leguminosae).

Gajatus niger 64, t. 24=Sesbania sesban Merr. (Leguminosae).

Gajatus luteus 64=Sesbania cannabina Pers. (Leguminosae).

Codiaeum simplex 65, t. 25 = Codiaeum variegatum Blume (Euphorbiaceae).

Codiaeum taeniosum 68, t. 26 = Codiaeum variegatum var. taeniosum Muell.-Arg. (Euphorbiaceae).

Codiaeum silvestre 69, t. 27 = Codiaeum bractiferum Roxb. (Euphorbiaceae).

Gendarussa (incl. alba, nigra, fusca) 70, t. 28=Justicia gendarussa Linn. (Acanthaceae).

Gendarussa femina 72, t. 29=Rhinacanthus nasuta (Linn.) Kurz (Acanthaceae).

Involucrum cusci 73 = Euphorbiaceae indet.

Folium bracteatum (incl. vulgare, rubrum, et igneum) 73, t. 30=Grap-tophyllum pictum Griff. (Acanthaceae).

Scutellaria prima 75, $t.\ 31 = Nothopanax\ scutellarium\ Merr.\ (Araliaceae)$. Scutellaria secunda latifolia $76 = Nothopanax\ tricochleatum\ Miq.\ (Araliaceae)$.

Scutellaria secunda angustifolia 76, t. 32=Nothopanax pinnatum Miq. (Araliaceae).

Scutellaria tertia 78, t. 33=Nothopanax fruticosum Miq. (Araliaceae). Terminalis alba domestica 79, t. 34, f. 1=Taetsia fruticosa Merr. (Liliaceae).

Terminalis alba silvestris $80 = Taetsia\ fruticosa\ Merr.\ (Liliaceae)$.

Terminalis rubra 80, t. 34, f. $2=Taetsia\ fruticosa\ Merr.\ (Liliaceae)$.

Terminalis angustifolia 81, t. 35=Pleomele angustifolia N. E. Br. (Liliaceae).

Cauda felis domestica 82, t. 36=Acalypha hispida Burm. f. (Euphorbiaceae).

Cauda felis agrestis rubra 84, t. 37, f. 1=Acalypha amentacea Roxb. (Euphorbiaceae).

Cauda felis agrestis alba 84, t. 37, f. 2=Acalypha amentacea Roxb. (Euphorbiaceae).

Cauda felis agrestis saxatilis 84=?

Flos convolutus 85, t. 38=Plumiera acuminata Ait. (Apocynaceae).

Flos manilhanus 87, t. 39 = Tabernaemontana divaricata R. Br. (Apocynaceae).

Ligularia lactea e Java 88=? Euphorbia neriifolia Linn. (Euphorbiaceae). Ficus indica 89=Opuntia sp. (Cactaceae).

Ligularia minor 90 = Euphorbia neriifolia Linn. (Euphorbiaceae).

Ricinus albus domesticus (incl. agrestis et ruber) 92, 97, t. 41 = Ricinus communis Linn. (Euphorbiaceae).

Ricinus americanus 92=Jatropha curcas Linn. (Euphorbiaceae).

Granum moluccanum 98, t. 42=Croton tiglium Linn. (Euphorbiaceae).

Folium polypi mas (et femina) 101, t. 43=Boerlagiodendron palmatum Harms (Araliaceae).

Frutex aquosus mas 102, t. 44=Leea aculeata Blume (Vitaceae).

Frutex aquosus femina 103, t. 45=Leea aequata Linn. (Vitaceae).

Flamma sylvarum 105, t. 46=Ixora fulgens Roxb. (Rubiaceae).

Flamma sylvarum peregrina 107, t. 47=Ixora chinensis Lam. (Rubiaceae).

Petasites amboinensis 107, t. 48=Clerodendron rumphianum De Vr. & Teysm. (Verbenaceae).

Petasites agrestis 108, t. 49=Clerodendron speciosissimum Lindl. (Verbenaceae).

Caryophyllaster litoreus 110, t. $50 = Dodonaea \ viscosa \ Jacq. (Sapindaceae)$. Folium principissae latifolium 111, t. $51 = Mussaenda \ reinwardtiana \ Miq. (Rubiaceae)$.

Folium principissae angustifolium 111=Mussaenda forsteniana Miq. (Rubiaceae).

Folium crocodili latifolium (et parvifolium) 112, t. 52=Desmodium umbellatum DC. (Leguminosae).

Frutex lintearius 114, t. 53=Broussonetia papyrifera Vent. (Moraceae).

Buglossum litoreum 116, t. 54=Scaevola frutescens Krause (Goodeniaceae).

Buglossum lanuginosum 119, t. 55=Tournefortia argentea Linn. (Boraginaceae).

Perlarius (incl. parvifolius) I 120, t. 56=Pipturus argenteus Wedd. (Urticaceae).

Perlarius latifolius 121=Robinsoniodendron ambiguum Merr. (Urticaceae).

Perlarius II 122, t. 57 = Maesa tetrandra A. DC. (Myrsinaceae).

Perlarius III 122=? Maesa sp. (Myrsinaceae).

Mamanira 123, t. 58=Callicarpa cana Linn. (Verbenaceae).

Mamanira alba 124, t. 59=Callicarpa cuspidata Roxb. (Verbenaceae).

Frutex ceramicus 124, t. 60 = Callicarpa sp. (Verbenaceae).

Cortex piscatorum 125, t. 61=Trema amboinensis Blume, non auctt. (T. virgata Blume) (Ulmaceae).

Frutex carbonarius I albus 126, t. 62=?

Frutex carbonarius II ruber, latifolius, asper $126,\ 127 = ?$ (Melastomataceae).

Folium politorium vulgare fruticosum 128, t. 63=Ficus ampelos Burm. f. (Moraceae).

Folium politorium arborescens 128=Ficus coronata Reinw. (Moraceae).

Folium politorium flagellare 128=Ficus ampelos Burm. f. (Moraceae).

Folium calcosum 129, t. 64=Melanolepis multiglandulosa Rchb. f. & Zoll. (Euphorbiaceae).

Frutex excoecans 130, t. 65 = Homalanthus populneus Pax (Euphorbiaceae). Cortex saponarius 131, t. 66 = Albizzia saponaria Blume (Leguminosae).

Capsicum silvestre 133, t. 67=Tabernaemontana capsicoides Merr. (Apocynaceae).

Frutex cerasiformis 134, t, 68=?

Pharmacum papetarium 134, t. 69=Astronia papetaria Blume (Melastomataceae).

Lignum aquatile 135, t. 70=Oreocnide rubescens Miq. (Urticaceae).

Fragarius ruber 135, t. 71 = Otanthera cyanoides Triana (Melastomataceae).

Fragarius ruber grandifolius 136=Melastoma sp. (Melastomataceae).

Fragarius niger 137, t. 72=Melastoma polyanthum Blume (Melastomataceae).

Blimbingum silvestre 138, t. 73 $\pm Elaeocarpus$ oppositifolius Miq. (Elaeocarpaceae).

Pandanus verus 139, t. 74=Pandanus tectorius Soland. (Pandanaceae).

Pandanus spurius 142, t. 75=Pandanus robinsonii Merr. (Pandanaceae).

Pandanus humilis 143, t. 76=Pandanus polycephalus Lam. (Pandanaceae).

Pandanus montanus silvestris 145=Pandanus terrestris Warb. (Pandanaceae).

Pandanus silvestris terrestris 145, t. 77=Pandanus amboinensis Warb. (Pandanaceae).

Pandanus latifolius 146, t. 78=Pandanus hasskarlii Merr. (Pandanaceae).

Pandanus moschatus 147=Pandanus tectorius Soland. var. moschatus Merr. (Pandanaceae).

Pandanus ceramicus 149, t. 79=Pandanus conoideus Lam. (Pandanaceae).

Folium baggea verum 150 = Pandanus bagea Miq. (Pandanaceae).

Folium baggea quoad t. 81=Pandanus tectorius Soland. (Pandanaceae).

Folium baggea maritimum 151, t. 80=Pandanus dubius Spreng. (Pandanaceae).

Pandanus repens 152=Pandanus repens Miq. (Pandanaceae).

Pandanus funicularis 153, t. 82=Freycinetia funicularis Merr. (Pandanaceae).

Pandanus caricosus 154=Scirpiodendron ghaeri Merr. (Cyperaceae).

VOLUME V

Folium linguae 1, t. 1=Bauhinia lingua DC. (Leguminosae).

Folium linguae litorea alba 2=Bauhinia sp. (Leguminosae).

Funis viminalis 3, t, 2=Ventilago sp. (Rhamnaceae).

Funis quadrifidus 4, t. 3=Petraeovitex multiflora Merr. (Verbenaceae).

Faba marina 5, t. 4=Entada phaseoloides Merr. (Leguminosae).

Parrana nigra Rumph. 7=? Entada sp. (Leguminosae).

Parrana rubra 9, t. 5=Dioclea reflexa Hook. f. (Leguminosae).

Lobus literalis 10, t. 6=Mucuna gigantea DC. (Leguminosae).

Parrana miniata 10=Mucuna miniata Merr. (Leguminosae).

Funis gnemoniformis 11, t. 7=Gnetum gnemonoides Brongn. (Gnetaceae).

Gnemon funicularis 12, t. 8=Gnetum indicum Merr. (Gnetaceae).

Funis urens aspera 13, t. 9 = Tetracera scandens Merr. (Dilleniaceae).

Funis urens glabra 13=Tetracera boerlagei Merr. (Dilleniaceae).

Funis papius latifolius 14, t. 10=Asclepiadaceae indet.

Funis papius parvifolius 15, t. 11=Ichnocarpus sp. (Apocynaceae).

Funis cratium 16, t. 12=Apocynaceae indet.

Lacca lignum 17, t. 13=Dalbergia parviflora Roxb. (Leguminosae).

Spina vaccarum 21, t. 14=Artabotrys suaveolens Blume (Annonaceae).

Cudranus bimanus 22, t. 15, f. 2 = Cudrania javanensis Tréc. (Moraceae).

Cudranus amboinicus 22, t. 15, f. $1 = Cudrania\ javenensis\ Tréc.\ (Moraceae)$.

Limonellus litoreus 24=?

Cudranus amboinensis silvestris 25, t. 16 = Cudrania javanensis Tréc. (Moraceae).

Limonellus funicularis montanus 25=Pisonia aculeata Linn. (Nyctaginaceae)

Camunium vulgare 26, t. 17=Murraya paniculata Jack (Rutaceae).

Camunium javanicum 27=Murraya paniculata Jack (Rutaceae).

Camunium sinense 28, t. 18, f. 1=Aglaia odorata Lour. (Meliaceae).

Camunium japonense 29, t. 18, f. 2=Murraya paniculata Jack (Rutaceae).

Cortex consolidans 30, t. 19=Parameria barbata K. Sch. (Apocynaceae).

Pulassarium 32, t. 20=Alyxia laurina Gaudich. (Apocynaceae).

Pulassarium spurium 33=? Apocynaceae indet. (sub Alyxia).

Funis pulassarius 34, t. 21=Chilocarpus sp. (Apocynaceae).

Tuba baccifera 35, t. 22=Anamirta cocculus W. & A. (Menispermaceae).

Tuba radicum alba 37, t. 23 = Derris elliptica Benth. (Leguminosae).

Tuba radicum nigra 38=? Derris sp. (Leguminosae).

Tuba flava 38, t. 24=Arcangelisia flava Merr. (Menispermaceae).

Folium lunatum minus 40, t. 25, f. 1=Pericampylus glaucus Merr. (Menispermaceae).

Tuba siliquosa 41, t. 25, f. $2 = Derris \ trifoliata \ Lour. \ (Leguminosae)$.

Pharmacum magnum vulgare 42, t. 26, f. 1=Piper retrofractum Vahl (Piperaceae).

Pharmacum magnum parvifolium 42, t. 26, f. 2=Piper sp. (Piperaceae). Pharmacum magnum marinum 42=Piper sp. (Piperaceae).

Gumi susu 43=? Ficus sp. (Moraceae).

Sirium decumanum 45, t. 27=Piper decumanum Linn. (Piperaceae).

Sirium decumanum album $45 = Piper\ reinwardtianum\ C.\ DC.\ (Piperaceae)$.

Sirium arborescens tertium 46, t. 28, f. 1=Piper arborescens Roxb. (Piperaceae).

Sirium arborescens tertium alterum 48 = Piper sp. (Piperaceae).

Piper caninum 49, t. 28, f. 2=Piper caninum Blume (Piperaceae).

Sirioides 49=Strychnos barbata A. W. Hill (Loganiaceae).

Sirioides alter 50, t. 29, f. 1=Myxopyrum macrolobum A. W. Hill (Oleacee).

Flos pergulanus 51, t. 29, f. 2=Vallaris glabra O. Kuntze (Apocynaceae).

Flos manore (incl. plenus) 52, t. 30=Jasminum sambac Ait. (Oleaceae).

Jasminum litoreum 54=? Jasminum sp. (Oleaceae).

Flos coeruleus 56, t. 31 = Clitoria ternatea Linn. (Leguminosae).

Abrus frutex 57, t. 32=Abrus precatorius Linn. (Leguminosae).

Viscum amboinicum album 60, t. 33=Loranthus rumphii Merr. (Loranthaceae.)

Viscum amboinicum rubrum 61=Elytranthe amboinensis Merr. (Loranthaceae).

Viscum amboinicum III 62=Loranthus sp. (Loranthaceae).

Funis uncatus latifolius 63, t. 34, f. $1=Uncaria\ longifolia\ Merr.\ (Rubiaceae)$.

Funis uncatus angustifolius 63, t. 34, f. 2=Uncaria setiloba Benth. (Rubiaceae).

Funis uncatus lanosus 65, t. 34, f. 3=Uncaria cordata Merr. (Rubiaceae).

Funis muraenarum mas 66, t. 35, f. 1=Medinilla crispata Blume (Melastomataceae).

Funis muraenarum femina 67, t. 35, f. 2=Medinilla macrocarpa Blume (Melastomataceae).

Funis muraenarum III 67=Medinilla sp. (Melastomataceae).

Aylaun nya femina 67=Pipturus repandus Wedd. (Urticaceae).

Funis muraenarum latifolius 68, t. 36=Conocephalus amboinensis Warb. (Moraceae).

Funis convolutus 69, t. 37, f. 1=Derris heptaphylla Merr. (Leguminosae).

Clompanus funicularis 70, t. 37, f. 2=Connarus sp. (Connaraceae).

Quis qualis 71, t. 38=Quisqualis indica Linn. (Combretaceae).

Sinapister 73, t. 39, f. 1 = ?

Sinapister minor 74=?

Amara litorea 74, t. 39, f. 2=Colubrina asiatica Rich. (Rhamnaceae).

Olus crudum minus 75, t. 40, f. 2=Gymnema syringaefolium Boerl. (Asclepiadaceae).

Olus crudum majus 76, t. 40. f. 1=? Gymnema sp. (Asclepiadaceae).

Funis butonicus major 77, t, 41, f. 1=?

Funis butonicus minor 77, t. 41, f. 2=Dichapetalum moluccanum Merr. (Dichapetalaceae).

Funis musarius latifolius 78, t. 42 = Uvaria musaria DC. (Annonaceae).

Funis musarius angustifolius 78 = Uvaria sp. (Annonaceae).

Funis dentarius 79 = Uvaria sp. (Annonaceae).

Funis dentarius niger 79 = Uvaria sp. (Annonaceae).

Rudens silvaticus latifolius 80, t. 43, f. 1=Ficus sp. (Moraceae).

Rudens silvaticus parvifolius 80, t. 43, f. 2=Ficus recurva Blume (Moraceae).

Rudens silvaticus rugosus 80 = Ficus sp. (Moraceae).

Rudens silvaticus IV 81=? Ficus sp. (Moraceae).

Funis felleus 82, t. 44, f. 1=Tinospora rumphii Boerl. (Menispermaceae).

Serratula amara parvifolia 82 = Compositae indet.

Funis quadrangularis 83, t. 44, f. 2=Cissus quadrangularis Linn. (Vitaceae).

Funis pinguis 83=?

Crusta arborum minor 84, t. 45=Ficus punctata Thunb. (Moraceae).

Crusta arborum II alba 84=Ficus sp. (Moraceae).

Crusta arborum III odorata 85=Ficus sp. (Moraceae).

Crusta arborum IV minima 85=?

Jasminum litoreum 86, t. 46=Clerodendron commersonii Spreng. (Verbenaceae).

Rubus moluccus parvifolius 88, t. 47, f. 1=Rubus fraxinifolius Poir. (Rosaceae).

Rubus moluccus latifolius 88, t. 47, f. 2=Rubus moluccanus Linn. (Rubiaceae.)

Frutex globulorum femina 89, t. 48=Caesalpinia jayabo Maza (Leguminosae).

Frutex globulorum majorum 92, t. 49, f. 1=Caesalpinia crista Linn. (Leguninosae).

Nugae silvarum litoreae et terrestres 94, t. 50=Caesalpinia nuga Ait. (Leguminosae).

Nugae silvarum minimae 95, t. 49, f. $2=Acacia\ rugata\ Ham.\ (Leguminosae)$.

Palmijuncus calapparius 97, t. 51=Daemonorops calapparius Blume (Palmae).

Palmijuncus niger 101, t. 52=Daemonorops niger Blume (Palmae).

Palmijuncus albus 102, t. 53 = Calamus albus Pers. (Palmae).

Palmijuncus albus graminosus $104 = Calamus\ graminosus\ Blume\ (Palmae)$.

Palmijuncus verus 105=Calamus pisicarpus Blume (Palmae).

Palmijuncus verus angustifolius 105, t. 54, f. 2=Calamus rumphii Blume (Palmae).

Palmijuncus verus latifolius 106, t. 54, f. 1=Calamus pisicarpus Blume (Palmae).

Palmijuncus aracanicus 107=Calamus sp. (Palmae).

Palmijuncus palimbanicus 107 = Daemonorops palembanicus Blume (Palmae).

Palmijuncus viminalis 108, t. 55, f. 2=Calamus viminalis Willd. (Palmae).

Palmijuncus viminalis e Burone $109 = Calamus \ buroënsis \ Mart. \ (Palmae)$.

Palmijuncus viminalis s. ua huay 109 = Calamus sp. (Palmae).

Palmijuncus equestris 110, t. 56=Calamus equestris Willd. (Palmae).

Palmijuncus equestris crasissimus $111 = Calamus \ cawa$ Blume (Palmae).

Palmijuncus equestris s. rottang cawa $112 = Calamus \ cawa \ Blume \ (Palmae)$.

Zalacca 113, t. 57, f. 2=Zalacca edulis Reinw. (Palmae).

Palmijuncus draco 114, t. 58, f. 1, A-D.=Daemonorops draco Blume (Palmae).

Palmijuncus draco e Bantam 116=Daemonorops ruber Blume (Palmae).

Palmijuncus acidus 119, t. 58, f. 2, E=Calamus acidus Becc. (Palmae).

Boeloe rottang 119=? Dinochloa sp. (Gramineae).

Palmijuncus laevis 120, t. 59, f. 1=Flagellaria indica Linn. (Flagellariaceae).

Cantharifera 121, t. 59, f. 2=Nepenthes mirabilis Merr. (Nepenthaceae).

Cantharifera alba 122=Nepenthes maxima Reinw. (Nepenthaceae).

Nugae silvarum silvestris $124 = Fagara\ torva\ Engl.\ (Rutaceae)$.

Musa domestica 125-133, t. 60 = Musa paradisiaca Linn. (Musaceae).

Musa uranoscopos 137, t. 61, f. 2=Musa paradisiaca Linn. var. (Musaceae).

Musa alphurica 138, t. 61, f. 3=Musa paradisiaca Linn., var. (Musaceae).

Musa simiarum 138, t. 61, f. 1=Musa acuminata Colla (Musaceae).

Musa silvestris 139=Musa textilis Née (Musaceae).

Musa silvestris mindanauensis 139=Musa textilis Née (Musaceae).

Musa silvestris amboinensis 139=Musa sp. (Musaceae).

Folium mensarium album 140, t. 62, f. 2=Heliconia bihai Linn. (Musaceae).

Folium mensarium nigrum 140=Heliconia bihai Linn. (Musaceae).

Folium mensarium rubrum 141=Cominsia rubra Val. (Marantaceae).

Folium buccinatum album 142=Phacelophrynium robinsonii Val. (Marantaceae).

Folium buccinatum asperum 142, t. 62, f. 1=Cominsia gigantea K. Sch. (Marantaceae).

Galanga major 143, t. 63=Alpinia galanga Sw. (Zingiberaceae).

Galanga minor 144, t. 63. f. D=? Alpinia galanga Sw. (Zingiberaceae).

Lampujum majus domesticum 148, t. 64, f. 1=Zingiber zerumbet Sm. (Zingiberaceae).

Lampujum zerumbed silvestre 148=Zingiber zerumbet Sm. (Zingiberaceae).

Lampujum zerumbed minus 148=Zingiber zerumbet Sm., var. amaricans Val. (Zingiberaceae).

Lampujum silvestre minus 150, t. 64, f. 2=Globba marantina Linn. (Zingiberaceae).

Lampujum silvestre amarum $151{=}Zingiber$ zerumbet Sm. (Zingiberaceae). Cardamomum minus 152, t. 65, f. $1{=}Amomum$ cardamomum Willd. (Zingiberaceae).

Cardamomum verum 153=Elettaria cardamomum Maton (Zingiberaceae).

Cardamomum majus 153=A momum maximum Roxb. (Zingiberaceae).

Bangleum 154, t. 65, f. 2=Zingiber cassumanar Roxb. (Zingiberaceae).
 Zingiber majus album 156, t. 66, f. 1=Zingiber officinale Rosc. (Zingiberaceae).

Zingiber majus rubrum 156=? Zingiber officinale Rosc. (Zingiberaceae). Zingiber minus 161, t. 66, f. 2=Zingiber officinale Rosc., var. minor Val. (Zingiberaceae).

Curcuma domestica major 162, t. 67=Curcuma longa Linn. (Zingiber-aceae).

Curcuma domestica minor $164 = Curcuma\ longa\ Koenig\ (Zingiberaceae)$. Curcuma agrestis $164 = Curcuma\ petiolata\ Roxb.\ (Zingiberaceae)$.

Zerumbed majus 168=Curcuma zedoaria Rosc. (Zingiberaceae); t. 68=? Curcuma viridiflora Rosb.

Zerumbed album, giring, et frigidum 169 = Curcuma spp. (Zingiberaceae). Zerumbed nigrum Rumph. 169 = Curcuma aeruginosa Roxb. (Zingiberaceae). Zerumbed manga Rumph. 169 = Curcuma sp. (Zingiberaceae).

Zerumbed claviculatum 172, t. 69, f. 1=Kaempferia pandurata Roxb. (Zingiberaceae).

Soncorus 173, t. 69, f. 2=Kaempferia galanga Linn. (Zingiberaceae).

Gandasulium 175, t. 69, f. 3=Hedychium chrysoleucum Hook. f. (Zingiberaceae).

Galanga malaccensis 176, t. 71, f. 1=Alpinia malaccensis Rosc. (Zingiberaceae).

Cannacorus 177, t. 71, f. 2 = Canna indica Linn. (Cannaceae).

Acorum palustre 178, t. 72, f. 1=Acorus calamus Linn. (Araceae).

Acorum terrestre 180=Acorus calamus Linn. (Araceae).

Schoenanthemum amboinicum 181, t. 72, f. 2=Andropogon citratus DC. (Gramineae).

 $\textbf{Schoenanthemum alterum } 182 = Andropogon \ exaltatus \ R. \ Br. \ (\textit{Gramineae}).$

Gladiolus odoratus indicus 185, t. 73=Dianella odorata Blume (Liliaceae).

Arundo saccharifera (incl. alba, fusca, nigra, et rottanga) 186, t. 74=Saccharum officinarum Linn. (Gramineae).

Ova piscium 191, t. 75, f. 1=Saccharum officinarum Linn., var. (Gramineae).

Lachryma jobi indica 193, t. 75 f. 2=Coix lachryma jobi Linn. (Gramineae).

Sorghum s. Battari 194, t. 75 bis, f. 1=Andropogon sorghum Brot. (Gramineae).

Oryza vulgaris 196=Oryza sativa Linn. (Gramineae).

Oryza glutinosa 201=Oryza sativa Linn. (Gramineae).

Panicum indicum 202, t. 75 bis, f. 2=Setaria italica Beauv. (Gramineae).

Frumentum indicum 202=Zea mays Linn. (Gramineae).

Panicum gramineum 203, t. 76, f. 2=Eleusine corocana Gaertn. (Gramineae).

Sesamum indicum nigrum et album 204, t. 76, f. 1=Sesamum orientale Linn. (Pedaliaceae).

Cannabis indica 208, t. 77=Cannabis sativa Linn. (Ulmaceae).

Ganja sativa 212, t. 78, f. 1 = Corchorus capsularis Linn. (Tiliaceae).

Ganja agrestis 213, t. 78, f. 2=Corchorus olitorius Linn. (Tiliaceae).

Ramium majus 214, t. 79, f. 1=Boehmeria nivea Gaudich. (Urticaceae).

Cnicus indicus 215, t. 79, f. 2=Carthamus tinctorius Linn. (Compositae).

Indicum 220=Indigofera tinctoria Linn. (Leguminosae).

Indicum 220, quoad t. 80=Indigofera suffruticosa Mill. (Leguminosae).

Indicum silvestre 222=Indigofera sp. (Leguminosae).

Indicum silvestre e Madagascar 223=Indigofera sp. (Leguminosae).

Indicum brasilianum 224=Indigofera sp. (Leguminosae).

Indicum spurium 224=Indigofera sp. (Leguminosae).

Tabacus 225=Nicotiana tabacum Linn. (Solanaceae).

Anassa domestica 227, t. 81 = Ananas comosus Merr. (Bromeliaceae).

Anassa silvestris 230=Pandanus terrestris Warb. (Pandanaceae).

Blitum indicum domesticum (album et maculosum) 231, t. 82, f. 1=Amaranthus viridis Linn. (Amaranthaceae).

Biltum indicum II maculosum amboinicum 231=Amaranthus viridis Linn-(Amaranthaceae).

Biltum Indicum III rubrum 232=Amaranthus tricolor Linn. (Amaranthaceae).

Blitum Indicum IV terrestre 232, t. 82, f. 2=? Amaranthus gangeticus Linn. (Amaranthaceae).

Blitum peruvianum 232=Chenopodium quinoa Willd. (Chenopodiaceae).

Blitum brasiliense 233=?

Blitum spinosum 234, t. 83, f. 1=Amaranthus spinosus Linn. (Amaranthaceae).

Biltum frutescens 235, t. 83, f. 2=Deeringia amaranthoides Merr. (Amaranthaceae).

Amarantus japonicus 236, t. 84=Celosia cristata Linn. (Amaranthaceae).

Amarantus vulgaris 236=Celosia cristata Linn. (Amaranthaceae).

Amarantus caudatus 237=Celosia argentea Linn. (Amaranthaceae).

Amarantus versicolor 237=Amaranthus tricolor Linn. (Amaranthaceae). Trongum hortense (incl. fuscum et album) 238, t. 85=Solanum melongena Linn. (Solanaceae).

Trongum agreste spinosum 240, t. 86, f. 1=Solanum trongum Poir. (Solanaceae).

Trongum agreste album verum 241=Solanum album Lour. (Solanaceae). Trongum agreste rubrum 241, t. 86, f. 2=Solanum album Lour. (Solanaceae).

Stramonia indica 242, t. 87, f. 1=Datura fastuosa Linn. var. alba C. B. Clarke (Solanaceae).

Stramonia indica III rubra 243, t. 87, f. 2=Datura fastuosa Linn. (Solanaceae).

Capsicum indicum 247, t. 88, f. 1-4=Capsicum frutescens Linn. (Solanaceae).

Mirabilis mexicana 253, t. 89=Mirabilis jalapa Linn. (Nyctaginaceae).

Lacca herba 256, t. 90=Impatiens balsamina Linn. (Balsaminaceae).

Matricaria sinensis 259, t. 91, f. 1=Chrysanthemum indicum Linn. (Compositae).

Artemisia latifolia 261, t. 91, f. 2=Artemisia vulgaris Linn. (Compositae). Artemisia latifolia rubra 261=? Artemisia vulgaris Linn. (Compositae). Basilicum indicum hortense 263, t. 92, f. 1=Ocimum basilicum Linn.

(Labiatae).

Ocimum agreste 265, t. 92, f. 2=Ocimum sanctum Linn. (Labiatae).

Ozimum citratum indicum 266, t. 93, f. 1=Ocimum sp. aff. Q. basilicum Linn. (Labiatae).

Mentha crispa 167, t. 93, f. 2=Mentha arvensis Linn. (Labiatae).

Portulaca indica I, II 268=Portulaca oleracea Linn. (Portulacaceae).

Portulaca indica III, IV 268=Portulaca quadrifida Linn. (Portulacaceae).

Portulaca indica V, 268=? Crithamum maritimum Linn. (Umbelliferae).

Levisticum indicum 269, t. 93, f. 3=? Antheriscus sp. (Umbelliferae).

Carum 270=Carum copticum Benth. (Umbelliferae).

Amudium 270=Carum copticum Benth. (Umbelliferae).

Mussi 271=Umbelliferae indet.

Sempervivum majus indicum 271=Aloe vera Linn. (Liliaceae).

Aloe americana 272=Agave cantala Roxb. (Amaryllidaceae).

Aloe americana parva 273, $t. 94 = Agave \ cantala \ Roxb. \ (Amaryllidaceae)$.

Planta anatis 275, t. 95=Kalanchoe laciniata DC. (Crassulaceae).

Oxys lutea indica 277=Oxalis repens Thunb. (Oxalidaceae).

Lapathum hortense 277=Rumex patentia Linn. (Polygonaceae).

Crotalaria I major 278, t. 96, f. 1=Crotalaria retusa Linn. (Leguminosae).

Crotalaria II minor 278=Crotalaria quinquefolia Linn. (Leguminosae).

Crotalaria III agrestis 279=Crotalaria chinensis Linn. (Leguminosae).

Lagansa alba 280, t. 96, f. 3=Polanisia viscosa DC. (Capparidaceae).

Lagansa rubra 280 t. 96, f. 2=Gynandropsis pentaphylla DC. (Capparidaceae).

Sinapi sinense album 282=Brassica juncea Coss. (Cruciferae).

Sinapi sinense nigrum 282=Brassica juncea Coss. (Cruciferae).

Sinapi indigenum 282=Nasturtium indicum DC. (Cruciferae).

Gallinaria acutifolia 283, t. 97, f. 1=Cassia occidentalis Linn. (Leguminosae).

Gallinaria rotundifolia 283, t. 97, f. 2=Cassia tora Linn. (Leguminosae). Amica nocturna 285, t. 98=Polianthes tuberosa Linn. (Amaryllidaceae).

Flos susannae 286, t. 99=Platanthera susannae Lindl. (Orchidaceae).

Maccabuhay 287 = Tinospora sp. (Menispermaceae) quoad nomen = ? Orchidaceae indet. quoad descr.

Flos susannae minor 287=Habenaria rumphii Lindl. (Orchidaceae).

Satyria 287=Orchidaceae indet.

Flor inplus 288, t. 100, f. 1=Pentapetes phoenicea Linn. (Sterculiaceae). Flos globosus 289, t. 100, f. 2=Gomphrena globosa Linn. (Amaranthaceae). Majana (incl. alba et rubra) 291, t. 101=Coleus scutellaroides Benth. (Labiatae).

Melissa lotoria 292, t. 102, f. $1=Pogostemon\ cablin\ Benth.\ (Labiatae)$. Marrubium album amboinicum 294, t. 102, f. $2=Coleus\ amboinicus\ Lour.\ (Labiatae)$.

Marrubium album semisilvestre 294=Coleus sp. (Labiatae).

Majana aurea 296, t. 102, f. 3 = Coleus blumei Benth. (Labiatae).

Sonchus amboinicus 297, t. 103, f. 1=Emilia sonchifolia DC. (Compositae).

Sonchus volubilis 299, t. 103, f. 2=Blumea chinensis DC. (Compositae).

Sonchus volubilis javanicus 299, t. 104, f. 1=Pluchea indica Less. (Compositae).

Herba sentiens 301, t. 104, f. 2=Biophytum sensitivum DC. (Oxalidaceae).

Herba mimosa 303=Mimosa pudica Linn. (Leguminosae).

Caban cabanan 304=Leguminosae indet. sub. Mimosa.

Aeschynomene theophrasti 304=Leguminosae indet.

Similis planta peruana 304 = Leguminosae indet. sub Mimosa.

Altera planta peruana etc. 304=Leguminosae indet. sub Mimosa.

Pina hui huitzli 304=Leguminosae indet. sub Mimosa.

Planta sentiens hispanorum 304 = Leguminosae indet. sub Mimosa.

Arbor pudica 305=Leguminosae indet. sub Mimosa.

Herba viva 305=indet. sub Mimosa.

(Araceae).

Tulipa javana 306, t. 105=Crinum zeylanicum Linn. (Amaryllidaceae).

Arum indicum sativum 308, t. 106=Alocasia macrorrhiza Schott (Araceae).

Arum silvestre I latifolium $310 = Alocasia \ macrorrhiza \ Schott \ (Araceae)$.

Arum silvestre II medium 310, t. 107=? Alocasia longiloba Miq. (Araceae).

Arum aquaticum 312, t. 108=Aglaonema oblongifolium Kunth (Araceae).

Arum aegyptium 313, t. 109=Colocasia esculenta Schott (Araceae).

Caladium aquatile 318, t. 110, f. 1=Colocasia esculenta Schott (Araceae). Arisarum amboinicum 319, t. 110, f. 2=Typhonium divaricatum Dcne.

Arisarum esculentum 321, t. 111, f. 1=Schizmatoglottis calyptrata Z. & M. (Araceae).

Dracunculus amboinicus I niger 322, t. 111, f. $2=Homolomena\ cordata$ Schott (Araceae).

Dracunculus amboinicus II albus 322=Homalomena sp. (Araceae).

Dracunculus amboinicus III ruber 323=Homalomena sp. (Araceae).

Tacca sativa 324, t. 112=Tacca pinnatifida Forst. (Taccaceae) and Amorphophallus campanulatus Blume (Araceae).

Yucca 325=Manihot utilissima Pohl (Euphorbiaceae).

Erva de Sta Maria 326=Araceae indet.

Tacca phallifera 326, t. 113, f. 1=Tacca pinnatifida Forst. (Taccaceae).

Taccae fungus 326, t. 113, f. 2=Amorphophallus campanulatus Blume (Araceae).

Itelpou 327=Araceae indet.

Tacca litorea 328, t. 114=Tacca pinnatifida Forst. (Taccaceae).

Tacca montana (incl. minor et major) 329, t.~115 = Tacca~palmata~Blume~(Araceae).

Piper longum 333, t. 116, f. 1=Piper retrofractum Vahl (Piperaceae).

Piper longum americanum 334=Piper sp. (Piperaceae).

Piper e philippinis (sabia) 334=Piper retrofractum Vahl (Piperaceae).

Piper e philippinis (samo) 335=Piper betle Linn. (Piperaceae).

Piper album & nigrum 335=Piper nigrum Linn. (Piperaceae).

Sirii folium 336, t. 116, f. 2=Piper betle Linn. (Piperaceae).

Siriboa 340, t. 117=Piper betle var. siriboa C. DC. (Piperaceae).

Sirium silvestre $342\ t.\ 118,\ f.\ 1,\ 2=Piper\ caducibracteum\ C.\ DC.\ (Piperaceae).$

Sirium terrestre 344, t. 119, f. 1=Piper sarmentosum Roxb. (Piperaceae).

Sirium frigidum rotundifolium 345, t. 119, f. 2=Piper sp. (Piperaceae).

Sirium frigidum latifolium 345=Piper sp. (Piperaceae).

Ubium vulgare 346, t. 120 = Dioscorea alata Linn. (Dioscoreaceae).

Ubium digitatum 350, t. 121=Dioscorea alata Linn. (Dioscoreaceae).

Ubium draconum 351, t. 122, f. D, E = Dioscorea alata Linn. (Dioscoreaceae).

Ubium anniversarium 353, t. 123=Dioscorea alata Linn. (Dioscoreaceae).

Ubium pomiferum (incl. silvestre) 354, t. 124=Dioscorea bulbifera Linn. (Dioscoreaceae).

Inhame St. Thome 355=Dioscorea alata Linn. (Dioscoreaceae).

Ubium ovale 356, t. 125 = Dioscorea alata Linn. (Dioscoreaceae).

Combilium 327, t. 126=Dioscorea esculenta Burkill (Dioscoreaceae).

Ubium quinquefolium 359, t. 127=Dioscorea pentaphylla Linn. (Dioscoreaceae).

Mandihoca 360=Manihot utilissima Pohl (Euphorbiaceae).

Ubium silvestre 361, t. 128=Dioscorea hispida Dennst. (Dioscoreaceae).

Colot 364=Dioscorea hispida Dennst. (Dioscoreaceae).

Ubium polypoides I album 364, t. 129=Stemona tuberosa Lour. (Stemonaceae).

Ubium polypoides II nigrum 365=Stemona moluccana C. H. Wright (Stemonaceae).

Batatta 367, t. 130=Ipomoea tuberosa Poir. (Convolvulaceae).

Batatta mammosa 370, t. 131=? Operculina turpethum S. Manso (Convolvulaceae).

Glans terrestris costensis 372, t. 132, f. 1=Coleus tuberosus Benth. (Labiatae).

Cacara bulbosa 373, t. 132, f. 2=Pachyrrhizus erosus Urb. (Leguminosae).

Lobus quadrangularis 374, t. 133=Psophocarpus tetragonolobus DC. (Leg-uminosae).

Dolichos sinensis 375, t. 134=Vigna sinensis Endl. (Leguminosae).

Lobus machaeroides 376, t. 135, f. 1=Canavalia gladiata DC. (Leguminosae).

Phaseolus balicus 377, t. 135, f. 2=Cajanus cajan Millsp. (Leguminosae).

Cacara 378, t. 136=Dolichos lablab Linn. (Leguminosae).

Cacara alba 380, t. 137=Dolichos lablab Linn. (Leguminosae).

Cacara nigra 381, t. 138=Mucuna aterrima Merr. (Leguminosae).

Phaseolus scriptus 382=? Phaseolus vulgaris Linn. (Leguminosae).

Faba rubra 382=? Phaseolus vulgaris Linn. (Leguminosae).

Phaseolus minor 383, t. 139, f. 1=Vigna cylindrica Merr. (Leguminosae).

Phaseolus minimus 386, t. 139, f. 2=Phaseolus aureus Roxb. (Leguminosae).

Phaseolus minimus silvestris 387=Pueraria phaseoloides Benth. (Leguminosae).

Cadelium 388, t. 140=Glycine max Merr. (Leguminosae).

Phaseolus cylindraceus 389=Phaseolus calcaratus Roxb. (Leguminosae).

Cacara litorea 390, t. 141, f. 1=Canavalia microcarpa Merr. (Leguminosae).

Cacara litorea 390, p. p. = Canavalia lineata DC. (Leguminosae).

Phaseolus maritimus 391, t. 141, f. 2 = Vigna marina Merr. (Leguminosae).

Cacara pilosa 392=Mucuna aterrima Merr. (Leguminosae).

Cacara pruritus 393, t. 142=Mucuna pruriens DC. (Leguminosae).

Comolenga 395, t. 143 = Benincasa hispida Cogn. (Cucurbitaceae).

Cucurbita lagenaria 397, t. 144=Lagenaria leucantha Rusby (Cucurbitaceae).

Cucurbita lagenaria silvestris 398=Lagenaria leucantha Rusby (Cucurbitaceae).

Cucurbita indica vulgaris 398=? Lagenaria leucantha Rusby (Cucurbitaceae).

Pepo indicus 399, t. 145=Cucurbita pepo Linn. (Cucurbitaceae).

Anguria indica (incl. altera) 400, t. 146, f. 1=Citrullus vulgaris Schrad. (Cucurbitaceae).

Melo 404=Cucumis melo Linn. (Cucurbitaceae).

Cucumis indicus 404 (incl. vulgaris, butonensis, sinensis) = Cucumis sativus Linn. (Cucurbitaceae).

Cucumis indicus IV maximus 404=Cucumis melo Linn., var. (Cucurbitaceae).

Petola s. Petola Tschina 405, t. 147=Luffa cylindrica Roem. (Cucurbitaceae).

Petola anguina 407, t. 148=Trichosanthes anguina Linn. (Cucurbitaceae).

Petola bengalensis 408, t. 149=Luffa acutangula Roxb. (Cucurbitaceae).

Petola silvestris 409, t. 150=Luffa cylindrica Roem. (Cucurbitaceae).

Amara indica 410, t. 151=Momordica charantia Linn. (Cucurbitaceae).

Amara sinica 411=Momordica charantia Linn. (Cucurbitaceae).

Amara silvestris 413, t. 152, f. 1=? Momordica charantia Linn. (Cucurbitaceae).

Poppya rotunda 414, t. 153=Momordica cochinchinensis Spreng. (Curcurbitaceae).

Poppya oblonga 414=? Momordica cochinchinensis Spreng. (Cucurbitaceae).

Poppya silvestris 414, t. 152, f. 2=Trichosanthes trifolia Merr. (Cucurbitaceae).

Pomum amoris 416, t. 154, f. 1=Lycopersicum esculentum Mill. (Solanaceae).

Gandola (incl. alba et rubra) 417, t. 154, f. $2=Basella\ rubra\ Linn.$ (Basellaceae).

Olus vagum (incl. palustre) 419, t. 155, f. 1=Ipomoea reptans Poir. (Convolvulaceae).

Flos cardinalis (incl. albus) 421, t. 155, f. 2=Quamoclit pennata Boj. (Convolvulaceae).

Seruneum aquatile 423, t. 156, f. 1=Wedelia biflora DC. (Compositae).

Chamaebalanus japonica 426, t. 156, f. 2=Arachis hypogaea Linn. (Leguminosae).

Convolvulus laevis indicus major 428, t. 157, f. 1, 2=Merremia peltata Merr. (Convolvulaceae).

Convolvulus laevis indicus rubra 429—Ipomoea rumphii Miq.=? Sticto-cardia campanulata Merr. (Convolvulaceae).

Convolvulus laevis indicus nigra 429=Ipomoea rumphii Miq.=? Sticto-cardia campanulata Merr. (Convolvulaceae).

Convolvulus laevis minor (incl. II femina et mas) 431, t. 158=Merremia umbellata Hallier f. (Convolvulaceae).

Convolvulus laevis III ampas ampas 432=Stephania forsteri A. Gray (Menispermaceae).

Convolvulus coeruleus 432=Ipomoea indica Merr. (Convolvulaceae).

Convolvulus marinus major 433, t. 159, f. 1=Ipomoea pes-caprae Roth (Convolvulaceae).

Convolvulus marinus II minor 433=Ipomoea pes-caprae Roth (Convolvulaceae).

Convolvulus riparius 435 t. 159, f. 2=Ipomoea gracilis R. Br. (Convolvulaceae).

Convolvulus foetidus 436, t. 160=Paederia foetida Linn. (Rubiaceae).

Pseudochina amboinensis 437, t. 161 = Smilax javensis A. DC. (Liliaceae). Pseudochina amboinensis II nigra 439 = Smilax leucophylla Blume (Liliaceae).

Pseudochina alba latifolia Rumph. 438=? Smilax leucophylla var. platy-phylla Merr. (Liliaceae).

Radix chinae 441=? Smilax china Linn. (Liliaceae).

Ubium nummularium 444, t. 162=Dioscorea nummularia Lam. (Dioscoreaceae).

Ubium nummularium floriferum 445, t. 163=? Dioscorea nummularia Lam. (Dioscoreaceae).

Funis crepitans I major 446, t. 164, f. 1 = Cissus repens Lam. (Vitaceae).

Funis crepitans II minor 446, t. 164, f. 2=Cissus repens Lam. (Vitaceae).

Funis crepitans III trifolia 447, t. 165=Columella geniculata Merr. (Vitaceae).

Funis crepitans IV 447=Cissus sp. (Vitaceae).

Vitis alba indica 448, t. 166, f. 1=Coccinea cordifolia Cogn. (Cucurbitaceae).

Folium causonis 450, t. 166, f. 2= $Columella\ trifolia\ Merr.\ (Vitaceae)$.

Folium causonis litoreum 450 = Tetrastigma sp. (Vitaceae).

Labrusca molucca 452, t.~167 = Ampelocissus~arachnoidea Planch. (Vitaceae).

Radix vesicatoria 453, t. 168=Plumbago indica Linn. (Plumbaginaceae).

Pes equinus 455, t. 169, f. 1=Centella asiatica Urb. (Umbelliferae).

Empetrum acetosum I album 457, t. 169, f. 2=Begonia tuberosa Lam. (Begoniaceae).

Empetrum acetosum II rubrum 457=Begonia sp. (Begoniaceae).

Empetrum acetosum III cordatum 457=Begonia sp. (Begoniaceae).

Serratula amara 459, t. 170, f. 1=Curanga fel-terrae Merr. (Scrophula-riaceae).

Crusta ollae I major 460, t. 170, f. 2=Ilysanthes antipoda Merr. (Scrophulariaceae).

Crusta ollae II minor 461, t. 170, f. 3=Lindernia crustacea F. Muell. (Scrophulariaceae).

Crusta ollae III angustifolia 461, t. 170, f. 4=Dentella repens Forst. (Rubiaceae).

Herba timoris 462=?

Cucumis murinus ruber 463, t. 171, f. 1=Melothria javanica Cogn. (Cucurbitaceae).

Cucumis murinus viridis 463, t. 171, f. 2=Melothria indica Lour. (Cucurbitaceae).

Corona ariadnes I punicea 464, t. 172=Hoya sussuela Merr. (Asclepia-daceae).

Corona ariadnes II lutea 465=Hoya lutea Done. (Asclepiadaceae).

Apocynum 466=Periploca graeca Linn. (Asclepiadaceae).

Sussuela esculenta I mas 467, t. 173, f. 1=Cynanchum sp. (Asclepiadaceae).

Sussuela esculenta II femina 467, t. 173, f. 2=Cynanchum ovalifolium Wight (Asclepiadaceae).

Olus crepitans I mas 469, t. 174, f. 1 = Tylophora sp. (Asclepiadaceae).

Olus crepitans II femina 469, t. 174, f. 2=Dischidia sp. (Asclepiadaceae).

Nummularia lactea major I fusca 470, t. 175, f. 1=Hoya rumphii Blume (Asclepiadaceae).

Nummularia lactea major II alba 470=Hoya alba Kostel. (Asclepiadaceae).

Nummularia lactea major minor 471, t. 175, f. 2=Hoya sp. (Asclepiadaceae).

Nummularia lactea major III albo-purpurea 471 = Hoya elegans Kostel. (Asclepiadaceae).

Nummularia lactea minor I minima 472, t. 176, f. 1=D ischidia nummularia R. Br. (Asclepiadaceae).

Nummularia lactea minor II major 473, t. 176, f. 2=Dischidia rumphii Miq. (Asclepiadaceae).

Pustula arborum 473, t. 175, f. 3=Conchophyllum imbricatum Blume (Asclepiadaceae).

Peponaster major 474=Aristolochia sp. (Aristolochiaceae).

Radix puloronica s. peponaster minor 476, t. 177=Aristolochia rumphii Kostel. (Aristolochiaceae).

Oculus astaci 479, t. 178, f. 1=Cissus aristata Blume. (Vitaceae).

Olus crepitans mas 480, t. 178, f. 2=Finlaysonia obovata Wall. (Asclepiadaceae).

Funis toaccae 481, t. 179=Fagraea amboinensis Blume (Loganiaceae).

Olus sanguinis 482, t. 180 = Cardiopterix moluccana Blume (Icacinaceae).

Adpendix arborum (incl. parvifolia et media) 483, t. 181, f. 1, z=Pothos latifolius Linn. (Araceae).

Adpendix porcellanica 485, t. 182, f. 1=Pothos rumphii Schott (Araceae).

(Lauraceae).

Adpendix erecta 487, t. 182, f. 2=Aglaonema oblongifolium Kunth (Araceae).

Adpendix cuscuaria I angustifolia 488=Freycinetia sp. (Pandanaceae).

Adpendix cuscuaria II latifolia 489, t. 183, f. 1= $Scindapsus\ marantaefolia$ Miq. (Araceae).

Adpendix laciniata 489, t. 183, f. 2=Epipremnum pinnatum Engl. (Araceae).

Adpendix duplo folio 490, t. 184, f. 1, 2=Pothos longifolius Presl (Araceae).

Adpendix III 490, t. 184, f. 3=Pothos longifolius Presl (Araceae). Cussuta v. Cussutha indica 491, t. 184, f. 4=Cassytha filiformis Linn.

VOLUME VI

Cyperus rotundus 1, t. 1, f. 1=Cyperus rotundus Linn. (Cyperaceae). Cyperus rotundus II floridus, 2, t. 1, f. 2=Pycreus odoratus Urb. (Cyperaceae).

Cyperus rotundus (vars.) 3, 4=Cyperaceae indet.

Cyperus longus 5, t. 2, f. 1 = Remirea maritima Aubl. (Cyperaceae).

Cyperus littoreus 6, t. 2, f. 2=Spinifex littoreus Merr. (Cyperaceae).

Cyperus dulcis 7, t. 3, f. 1=Eleocharis dulcis Trin. (Cyperaceae).

Gramen capitatum 8, t. 3, f. 2=Kyllinga monocephala Rottb. (Cyperaceae).

Gramen vaccinum femina 9, t. 4, f. 1=Dactyloctenium aegyptium Richt. (Gramineae).

Gramen vaccinum mas 10, t. 4, f. 2=Eleusine indica Gaertn. (Gramineae). Goddam 10=Eleusine corocana Gaertn. (Gramineae).

Gramen repens minus 11=Cynodon dactylon Pers.

Gramen caninum 11=Digitaria sanguinalis Scop., var. (Gramineae).

Gramen fumi 11, t. 4, f. 3=Eragrostis amabilis W. & A. (Gramineae).

Champeu 11=Panicum stagninum Retz. (Gramineae).

Gramen supplex 12=Digitaria sanguinalis Scop. (Gramineae).

Gramen roris (incl. litoreum) 12=Thuarea involuta R. Br. (Gramineae).

Gramen anatum 13=Panicum reptans Linn. (Gramineae).

Gramen aciculatum 13, t. 5, f. 1=Andropogon aciculatum Retz. (Gramineae).

Hippogrostis amboinica I major 14, t. 5, f. $2=Ischaemum\ timorense\ Kunth$ (Gramineae).

Hippogrostis amboinica II minor 14, t. 5, f. 3=Oplismenus compositus Beauv. (Gramineae).

Gramen arguens 15, t. 6, f. 1 = Themeda frondosa Merr. (Gramineae).

Calamagrostis 16, t. 6, f. 2=Anthistiria gigantea Hack. (Gramineae).

Gramen polytrichum amboinense 17, t. 7, f. 1=Fimbristylis setacea Benth. (Cyperaceae).

Gramen caricosum 17, t. 7, f. 2=Imperata cylindrica Beauv. var. koenigii (Retz.) Benth. (Gramineae).

Gramen vulpinum 18, t. 7, f. 2 B=Setaria flava Kunth (Gramineae).

Phoenix amboinica montana 19, t. 7, f. 3=Andropogon amboinicus Merr. (Gramineae).

Carex amboinica I major 20, t. 8, f. 1=Scleria bancana Miq. (Cyperaceae).

Carex amboinica II minor 20=Scleria lithosperma Sw. (Cyperaceae).

Carex amboinica III 20=Cyperaceae indet.

Carex amboinica laevis major 21=Mapania macrocephala K. Sch. (Cyperaceae).

Carex amboinica laevis minor 21 = Hypolytrum latifolium L. C. Rich. (Cyperaceae).

Carex arborea 21, t. 8, f. 3=Freycinetia graminea Blume (Pandanaceae). Carex culmaris 21=Gahnia rawacensis Steud. (Cyperaceae).

Lithospermum amboinicum 22, t. 9, f. 1=Coix lachryma jobi (Linn.) (Gramineae).

Arundinella I minor 23, t. 9, f. 2=Commelina nudiflora Linn. (Commelinaceae).

Arundinella II major 24=Commelina benghalensis Linn, (Commelinaceae). Arundinella III aquatica $24 = Cyanotis \ moluccana \ Merr. (Commelinaceae)$.

Arundinella IV adhaerens 25=Aneilema vitiense Seem. var. petiolata C. B. Clarke (Commelinaceae).

Arundinella V albiflora 25=Floscopa scandens Lour. (Commelinaceae).

Crateogonum amboinicum I minus 25=Hedyotis tenelliflora Blume (Rubiaceae).

Crateogonum amboinicum II majus 25, t. 10=Hedyotis verticillata Lam. (Rubiaceae).

Rosmarinus verus sinensis 26=Rosmarinus officinalis Linn. (Labiatae). Auris canina I femina 26, t. 11=Cyathula prostrata Blume (Amaranthaceae).

Auris canina II mas 27, t. 12, f. 1=Achyranthes aspera Linn. (Amaran-

Herba memoriae 29, t. 12, f. 2=Pouzolzia zeylanica Benn. (Urticaceae).

Prunella molucca hortensis I latifolia 30, t. 13, f. 1=Hemigraphis sp. (Acanthaceae).

Prunella molucca hortensis II angustifolia 30, t. 13, f. A. B.=Hemigraphis angustifolia Hallier f. (Acanthaceae).

Prunella molucca hortensis III 31=Hemigraphis petola Hallier f. (Acanthaceae).

Prunella molucca silvestris I alba 31, t. 13, f. 2=Hemigraphis reptans var. glaucescens Hallier f. (Acanthaceae).

Prunella molucca silvestris II rubra 32, t. 13, f. 3=Hemigraphis sp. (Acan-

Prunella molucca silvestris III rotunda 32 = Hemigraphis sp. (Acanthaceae). Ophiocolla altera 34=Pseuderanthemum curtatum Merr. (Acanthaceae). Aylilin 34=indet.

Olus scrofinum I album 34, t. 14, f. 1=Adenostemma lavenia O. Kuntze

Olus scrofinum II rubrum $35 = Ageratum \ conyzoides \ Linn. (Compositae)$. Olus scrofinum III luteum 35 = Crepis japonica Benth. (Compositae).

Senecio amboinicus 36, t. 14, f. 2=Vernonia cinerea Less. (Compositae). Olus squillarum 37, t. 15, f. 1=Alternanthera sessilis R. Br. (Amaran-

Agrimonia molucca 38, t. 15, f. 2=Bidens chinensis Willd. (Compositae). Herba admirationis 39=Leucas zeylanica R. Br. (Labiatae).

Herba admirationis, quoad t. 16, f. 1=Leucas lavandulifolia Sm.

Majana foetida 41, t. 16, f. $2=Dysophylla \ auricularia \ Blume \ (Labiatae)$. Herba moeroris alba 41, t. 17, f. 1=Phyllanthus niruri Linn. (Euphor-

Herba moeroris rubra 41, t. 17, f. 2=Phyllanthus urinaria Linn. (Euphor-

Ecliptica 43, t. 18, f. 1=Eclipta alba (Linn.) Hassk. (Compositae).

Sigalurium I rotundum 44, t. 19=Sida retusa Linn. (Malvaceae).

Sigalurium II longifolium 45, t. 18, f. 2=Sida acuta Burm. f. (Malvaceae).

Sigalurium III album 45 = Sida sp. (Malvaceae).

Urtica decumana (incl. alba et rubra) 47, t. 20, f. 1=Laportea decumana (Roxb.) Wedd. (Urticaceae).

Urtica decumana III vulgaris 48=Fleurya interrupta Gaudich. (Urticaceae).

Urtica mortua 49, t. 20, f. 2=Micrococca mercurialis Benth. (Euphorbiaceae).

Herba vitiliginum 49, t. 21, f. 1=Jussiaea suffruticosa Linn. (Oenotheraceae).

Folium tinctorium (incl. album et rubrum) 51, t. 22, f. 1=Peristrophe bivalvis Merr. (Acanthaceae).

Bungum I mas 52, t. 22, f. 2=Lepidagathis rumphii Merr. (Acanthaceae).

Bungum II femina 52, t. 21, f. 2=Pseuderanthemum pulchellum Merr. (Acanthaceae).

Moretiana 53, t. 23, f. 1=Ruellia repens Linn. (Acanthaceae).

Olus caprinum 54 = Pseuderanthemum racemosum Radlk. (Acanthaceae).

Esula esculenta 54, t. 23, f. 2=Euphorbia hirta Linn. (Euphorbiaceae).

Conyza odorata 55, t. 24, f. 1=Blumea balsamifera DC. (Compositae).

Conyza indica mas 56=? Blumea appendiculata DC. (Compositae).

Conyza cadaverum 56=? Blumea appendiculata DC. (Compositae).

Conyza indica minor 56 = Blumea sp. (Compositae).

Adulterina 58, t. 25, f. 1=Solanum verbascifolium Linn. (Solanaceae).

Lappago amboinica laciniata 59, t. 25, f. 2=Urena lobata Linn. (Malvaceae).

Lappago amboinica silvestris $60 = Triumfetta\ bartramia\ Linn.\ (Tiliaceae)$. Halicacabus indicus I major $60 = Physalis\ angulata\ Linn.\ (Solanaceae)$.

Halicacabus indicus II minor 61, t. 26, f. 1=Physalis minima Linn. (Solanaceae).

Halicacabus peregrinus 61, t. 24, f. 2=Cardiospermum halicacabum Linn. (Sapindaceae).

Halicacabus baccifer 62, t. 26, f. 2=Solanum nigrum Linn. (Solanaceae).

Palmifilix I nigra 63, t. 27=Cyathea amboinensis (v. A. v. R.) Merr. (Cyatheaceae).

Palmifilix II alba 63=Cyathea rumphiana (v. A. v. R.) Merr. (Cyatheaceae).

Palmifilix III postium 63=Cyathea sp. (Cyatheaceae).

Filix canarina 64=Polypodiaceae indet.

Filix aquatica 65, t. 28=Angiopteris amboinensis De Vr. (Marattiaceae).

Filix aquatica II mas 66 = Polypodiaceae indet.

Filix esculenta 67, t. 29=Athyrium esculentum Copel. (Polypodiaceae).

Filix amboinica mas 69 = Dryopteris ferox O. Kuntze (Polypodiaceae).

Filix amboinica urens 69=Polypodiaceae indet.

Filix lanuginosa 69= $Cibotium\ baranetz\ J.\ Sm.\ vel\ Dicksonia\ sorbifolia\ Sm.$ Lonchitis amboinica recta I major rubra 70, $t.\ 30$, $f.\ 1$ = $Blechnum\ orientale$ Linn. (Polypodiaceae).

Lonchitis amboinica recta I major alba 70, t. 30, f. 2=? Polypodium pallens Blume (Polypodiaceae).

Lonchitis amboinica recta II minor nigra 71=Tectaria crenata Cav. (Polypodiaceae).

Lonchitis amboinica recta II minor alba 71=Polypodiaceae indet.

Lonchitis amboinica III volubilis 71, t. 31=Stenochlaena palustris Bedd. (Polypodiaceae).

Lonchitis saguaria 72=Polypodiaceae indet.

Lonchitis amara 72=Polypodiaceae indet.

Lonchitis pilosa 72=Polypodiaceae indet.

Lonchitis muscosa 62=Polypodiaceae indet.

Dryopteris triplex arborea 73, t. 32, f. 1=Davallia elata Spreng. (Polypodiaceae).

Dryopteris triplex silvestris I terrestris 74=Tapeinidium amboynense C. Chr. (Polypodiaceae).

Dryopteris triplex silvestris arborea 74=Polypodiaceae indet.

Dryopteris triplex silvestris petraea 74=A diantum or Lindsaya sp. (Polypodiaceae).

Dryopteris campestris 74, t. 34, f. 2=Cheilanthes tenuifolia Sw. (Polypodiaceae).

Adianthum volubile I polypoides 75, t. 33=Lygodium circinatum Sw. (Schizaeaceae).

Adianthum volubile II medium 75=Lygodium circinatum Sw. (Schizae-aceae).

Adianthum volubile III minus 75, t. 32, f. 2, 3=Lygodium scandens Sw. (Schizaeaceae).

Capillus veneris amboinicus 77, t. 34, f. 1=Adiantum sp. (Polypodiaceae). Filix florida 78, t. 35, f. 1=Stenosemia aurita Presl (Polypodiaceae).

Polypodium indicum I pilosum s. majus 78, t. 36=Drynaria sparsisora Moore (Polypodiaceae).

Polypodium indicum II minus 80, t. 35, f. 2=Polypodium phymatodes Linn. (Polypodiaceae).

Phyllitis amboinica I arborea 82 (t. 37, f. 1?) = Asplenium nidus Linn. (Polypodiaceae).

Phyllitis amboinica II terrestris 82=Asplenium nidus Linn. (Polypodiaceae).

Simbar majangan $83 = Platycerium\ coronarium\ Desv.\ (Polypodiaceae)$.

Scolopendria major 84, t. 37, f. 3=Ophioglossum pendulum Linn. (Ophioglossaceae).

Scolopendria minor 84=? Polypodium sinuosum Wall, (Polypodiaceae).

Filix calamaria 85, t. 38 = Gleichenia linearis Clarke (Gleicheniaceae).

Muscus frutescens femina 86, t. 39, f. 1=Selaginella plana Hieron. (Selaginellaceae).

Muscus frutescens mas 87, t. 39, f. 2=Selaginella d'urvillei A. Br. (Selaginellaceae).

Muscus frutescens III muscagineus 87=Fungi indet.

Cingulum terrae 87, t. 40, f. 1 = Lycopodium cernuum Linn. (Lycopodiaceae).

Barba saturni 88 = Usnea sp. (Lichenes).

Muscus capillaris 89, t. 40, f. 2 = Usnea sp. (Lichenes).

Muscus gelatinus japonicum 90, t. 40, f. $3 = Gelidium \ amansii \ K\"utz.$ (Rhodophyceae).

Capillus nympharum 90=Chaetomorpha javanicum Kütz. (Chlorophyceae).

Alga coralloides sinensium 90 = Algae indet. (Rhodophyceae).

Tschintschau javanense 90=Salvia plebeia R. Br. (Labiatae).

Equisetum amboinicum 91, t. 41, f. 1=Lycopodium phlegmaria Linn. (Lycopodiaceae).

Equisetum amboinicum minor 92=? Lycopodium numularifolium Blume (Lycopodiaceae).

Equisetum secundum 92 = Psilotum triquetrum Sw. (Psilotaceae).

Equisetum silvestre 92=Schizaea dichotoma Sw. (Schizaeaceae).

Folium petolatum I mas 92, t. 41, f. 2=? Zeuxine amboinensis J. J. Sm. . (Orchidaceae).

Folium petolatum II femina 93, t. 41, f. 3=Anoectochilus reinwardtii Blume (Orchidaceae).

 $\label{eq:constraint} \textbf{Angraecum scriptum } 95, t. \ 42 = Graptophyllum \ pictum \ Blume \ (Orchidaceae).$

Angraecum II mangarum 96 = Orchidaceae indet.

Angraecum III cocorum 96=Orchidaceae indet.

Angraecum album majus 99, t. 43=Phalaenopsis amabilis Blume (Orchidaceae).

Angraecum album majus flore purpureo 99=Phalaenopsis amabilis Blume (Orchidaceae).

Angraecum album majus var. altera 99=Phalaenopsis amabilis Blume (Orchidaceae).

Angraecum album minus 99, t. 44, f. 1=Dendrobium ephemerum J. J. Sm. (Orchidaceae).

Angraecum rubrum 101, t. 44, f. 2=Renanthera moluccana Blume (Orchidaceae).

Angraecum quintum 102=Vandopsis lissochiloides Pfitz. (Orchidaceae).

Angraecum flavum sextum moschatum 102=Dendrobium rumphianum Teysm. (Orchidaceae).

Angraecum flavum septimum 103, t. 45 (et t. 46, f. 2?) = Dendrobium mirbelianum Gaudich. (Orchidaceae).

Angraecum flavum octavum 104, t. 46, f. 1=Vanda furva Lindl. (Orchidaceae).

Angraecum flavum nonum 104=? Dendrobium rumphianum T. & B. (Orchidaceae).

Angraecum flavum decimum $104 = Luisia\ confusa\ Rchb.\ f.\ (Orchidaceae)$.

Angraecum caninum undecimum 105, t. 47, f. 1=Dendrobium anosmum Lindl. (Orchidaceae).

Angraecum nervosum 106, t. 48=Coelogyne rumphii Lindl. (Orchidaceae).

Angraecum pungens 106=Sarcanthus subulatus Reichb. f. (Orchidaceae).

Angraecum saxatile 107, t. 49, f. 1=Vanda sp. (Orchidaceae).

Angraecum crumenatum t. 47, f. 2=Dendrobium papilioniferum J. J. Sm. (Orchidaceae).

Angraecum angustis crumenis 107=Eria moluccana Schltr. & J. J. Sm. (Ochidaceae).

Angraecum sediforme 107=Orchidaceae indet.

Angraecum uniflorum 107=Bulbophyllum sp. (Orchidaceae).

Angraecum gajang 108=Liparis treubii J. J. Sm. (Orchidaceae).

Angraecum jamboe 108=Dendrobium sp. (Orchidaceae).

Angraecum taeniosum 108=Orchidaceae indet.

Angraecum lanuginosum 108=Eria sp. (Orchidaceae).

Angraecum purpureum et nudum 109, t. 49, f. 2=Dendrobium sp. (Orchidaceae).

Angraecum purpureum II silvestre 109, t. 50, f. 1=Dendrobium purpureum Roxb. (Orchidaceae).

Herba supplex I minor 110, t. 50, f. 2=Dendrobium moluccense J. J. Sm. (Orchidaceae).

Herba supplex major femina s. secunda III=Dendrobium acinaciforme Roxb. (Orchidaceae).

Herba supplex major femina s. secunda t. 51, f. 1=Dendrobium sp. (Orchidaceae).

Herba supplex major secunda 111=? Dendrobium sp. (Orchidaceae).

Herba supplex major tertia 111=? Dendrobium sp. (Orchidaceae).

Herba supplex major quarta 111 = Dendrobium sp. (Orchidaceae).

Herba supplex major quinta 111, t. 51, f. 2=Dendrobium calceolum Roxb. (Orchidaceae).

Angraecum terrestre primum I purpureum 112=Spathoglottis plicata Blume (Orchidaceae).

Angraecum terrestre alterum 113, t. 52, f. 1=Phaius amboinensis Blume (Orchidaceae).

Angraecum terrestre primum album 113, t. 50, f. 3= $Phaius\ gratus\ Blume\ (Orchidaceae)$.

Involucrum s. angraecum terrestre tertium 114, t. 53—Curculigo capitulata O. Kuntze (Amaryllidaceae).

Involucrum s. angraecum terrestre alterum 115=Panicum palmifolium Koenig (Gramineae).

Flos triplicatus 115, t. 52, f. $2 = Calanthe\ veratrifolia\ R$. Br. (Orchidaceae). Orchis amboinica major I 116 = ? $Eulophia\ sp.$ (Orchidaceae).

Orchis amboinica major II 117, t. 54, f. 1=Curculigo orchoides Gaertn. (Amarullidaceae).

Orchis amboinica minor 118, t. 54, f. 2=Habenaria rumphii Lindl. (Orchidaceae).

Orchis amboinica minor altera 118, t. 54, f. 3=Peristylus sp. (Orchidaceae).

Nidus germinans formicarum I nigrarum 119, t. 55, f. 1=Hydnophytum amboinense Becc. (Rubiaceae).

Nidus germinans formicarum II rubrarum 119, t. 55, f. 2=Myrmecodia rumphii Becc. (Rubiaceae).

Tuber regium 120, t. 57, f. 4=Lentinus tuber regium Fries (Hymenomycetineae) and Pachyma tuber regium Fries (Fungi, incert.).

Hoelen 122=Pachyma hoelen Fries (Fungi, incert.).

Tuber sampadarium 123=Polygaster sampadarius Fries (Plectobasidiineae).

Boletus moschocaryanus 124=Agaricus moschocaryanus Fries (Hymenomycetineae).

Boletus saguarius 124=Hymenomycetineae indet.

Boletus infundibuli forma [figura] 125, t. 56, f. 1=Lentinus sajor-caju Fries (Hymenomycetineae).

Boletus infundibuli forma altera 125=? Lentinus sajor caju Fries (Hymenomycetineae).

Boletus II arboreus 125, t. 56, f. 2, 3=Lentinus djamor Fries (Hymenomycetineae).

Boletus III umbraculi forma 126=Hymenomycetineae indet.

Boletus IV terrestris 126=Hymenomycetineae indet.

Boletus V auris murina 126, t. 56, f. 4=Hirneola auricula judae Berk. (Hymenomycetineae).

Fungus arboreus | 127=Polyporus sp. (Hymenomycetineae).

Fungus arboreus II 128=Polyporus sp. and Polystictus sanguineus Fries (Hymenomycetineae).

Fungus arboreus III 128 = Favolus sp. (Hymenomycetineae).

Fungus elatus petasoides 128=Ganoderma amboinense (Lam.) Pat. (Hymenomycetineae).

Fungus elatus cochlearis 129, t. 57, f. 1=Ganoderma amboinense (Lam.) Pat. (Hymenomycetineae).

Fungus elatus digitatus 129, t. 57, f. 2, 3 = Ganoderma cochlear (Nees) Merr. (Hymenomycetineae).

Fungus igneus 130, t. 56, f. 5=Hymenomycetineae indet.

Fungus arborum tuberosus 130=? Lycoperdon sp. (Lycoperdineae).

Crepitus lupi verus 131 = Lycoperdon sp. (Lycoperdineae).

Phallus daemonum 131, t. 56, f. 7=Dictyophora phalloidea Desv. (Phallineae).

Macuerus femina 132, t. 58, f. 1=Cyrtandra decurrens DeVr. (Gesneriaceae).

Macuerus mas 133, t. 58, f. 2 = Pellionia sinuata Boerl. (Urticaceae).

Lomba 133, t. 59, f. 1=Piper subpeltatum Willd. (Piperaceae).

Globba longa 134, t. 60, f. 1 A=Amomum rumphii Sm. (Zingiberaceae).

Globba crispa I viridis 137, t. 61, f. 1=Amonum sp. (Zingiberaceae).

Globba crispa II rubra 137, t. 60, f. B-D; t. 61, f. 2=Amomum roseum Benth. & Hook. f. (Zingiberaceae).

Globba uviformis 138, t. 59, f. 2=Alpinia uviformis Horan. (vel Plagiostachys) (Zingiberaceae).

Globba hatuana 138=? Amomum aculeatum Roxb. (Zingiberaceae).

Globba uviformis II Lawassi malacca 139=Riedelia lanata K. Sch. (Zingiberaceae).

Globba acris 140=Amomum acre Val. (Zingiberaceae).

Globba silvestris major 140, t. 62, 63=Alpinia nutans Horan. (Zingiberaceae).

Globba silvestris minor 141=Alpinia gigantea Blume (Zingiberaceae).

Globba silvestris sekala 141=? Amomum sp. (Zingiberaceae).

Globba silvestris sulica 141=? Amomum magnificum Benth. & Hook. f. (Zingiberaceae).

Globba silvestris pada kanka 142=Alpinia sp. (Zingiberaceae).

Globba silvestris subterranea 142=Amomum sp. (Zingiberaceae).

Herba spiralis I hirsuta 143, t. 64, f. 1=Costus speciosus Blume var. hirsutus Blume (Zingiberaceae).

Herba spiralis II laevis 143, t. 64, f. 2=Costus speciosus Blume (Zingiberaceae).

ABCdaria 145, t. 65 = Spilanthes acmella Linn. (Compositae).

Phaseolus montanus I, II 146=Tephrosia sp. (Leguminosae).

Phaseolus montanus III, IV 146=Crotalaria linifolia Linn. f. (Leguminosae).

Crotalaria montana V 146=Desmodium gangeticum DC. (Leguminosae).

Crotalaria montana V quoad t. 66=Desmodium ormocarpoides DC. (Leguninosae).

Crotalaria montana VI, VII 146=Desmodium triquetrum DC. (Legum-inosae).

Crotalaria montana VIII Tsjeme-tsjeme 146=Leguminosae indet.

Amoena moesta 147, t. 67, f. 1=Cassia mimosoides Linn. (Leguminosae).

Pilosella amboinica 148=Compositae indet.

Rhabarbarum sinense 148=Rheum rhabarbarum Linn. (Polygonaceae).

Phaseolus adhaerens 150=Pseudarthria viscida W. & A. (Leguminosae).

Terebinthina 150, t. 67, f, 2=Limnophila aromatica Merr. (Scrophula-riaceae).

Menthastrum ambolnicum 151, t. 68, f. 1=Limnophila rugosa Merr. (Scrophulariaceae).

Ophioglossum simplex indicum 152, t. 68, f. 2=Ophioglossum pedunculosum Desv. (Ophioglossaceae).

Ophioglossum laciniatum 153, t. 68, f. 3 = Helminthostachys zeylanica Hook. (Ophioglossaceae).

Radix toxicaria I major 155, t. 69=Crinum asiaticum Linn. (Amaryllidaceae).

Radix toxicaria II terrestris 156=Crinum rumphii Merr. (Amaryllidaceae). Cepa silvestris 160, t. 70, f. 1=Eurycles amboinensis Herb. (Amaryllidaceae)

Lilium indicum 161, t. 70, f. 2=Pancratium zeylanicum Linn. (Amaryllidaceae).

Lilium indicum javanicum 162=Amaryllidaceae indet.

Aquifolium indicum I mas 163, t. 71, f. 1=Acanthus ebracteatus Vahl (Acanthaceae).

Aquifolium indicum II femina 163, t. 71, f. 2=Acanthus volubilis Wall. (Acanthaceae).

Crithamus indicus I ruber 165, t. 72, f. 1=Sesuvium portulacastrum Linn. (Aizoaceae).

Crithamus (Kaly articulatum) 166=Salicornia herbacea Linn. (Chenopodiaceae).

Crithamus verus 166, t. 72, f. 2=Crithamum maritimum Linn. (Umbelliferae).

Nymphaea indica major 168, t. 73=Nelumbium nelumbo Druce (Nymphaeaceae).

Nymphaea indica minor 172=Nymphaea pubescens Willd. & N. stellata Willd. (Nymphaeaceae).

Nymphaea indica minor II ceramica 173, t. 72, f. 3=Limnanthemum indicum Griseb. (Gentianaceae).

Millefolium aquaticum 176, t. 74, f. 1=Ceratopteris thalictroides Brongn. (Parkeriaceae).

Plantago aquatica 177, t. 74, f. 2=Pistia stratiotes Linn. (Araceae).

Olus palustre 178, t. 75, f. 1=Monochoria vaginalis Presl (Pontederiaceae).

Olus palustre femina 178=Monochoria vaginalis Presl, var. (Pontederiaceae).

Lens palustris 178=Lemna sp. (Lemnaceae).

Capillus nympharum 179=Chaetomorpha javanica Kütz. (Chlorophyceae).

Alga coralloides 181, t. 74, f. 3; t. 76, f. A, B, C=Gracilaria lichenoides Harv. (Rhodophyceae).

Acetabulum marinum 185, t. 76, f. 1=Sargassum polycystum J. Ag. (Phaeophyceae).

Acetabulum marinum infundibuliforme 185=Turbinaria ornata J. Ag. Phaeophyceae).

Acetabulum marinum e Macassar 186=Turbinaria sp. (Phaeophyceae).

Agarum II s. bracteatum 186=Mastocarpus klenzeanus Kütz. (Phaeo-phyceae).

144971---35

Agarum III funiculare s. foliatum 186=Sargassum aquifolium Ag. (Phaeo-phyceae).

Agarum IV lactucarium 186=Rhodophyceae indet.

Agarum V corticosum 186=Algae indet.

Bodelha 187=Fucus vesiculosus Linn. (Phaeophyceae).

Bodelha altera 187=Himanthalia lorea Lyng. (Rhodophyceae).

Sargasso s. Wier 187=Sargassum flavifolium Kütz. (Phaeophyceae).

Sargassum pelagium 188, t. 76, f. 2=Sargassum bacciferum Ag. (Phaeo-phyceae).

Acorus marinus 191, t. 75, f. 2=Enhalus acoroides Steud. (Hydrocharitaceae).

Cocus maldivicus 210, t. 81=Lodoicea maldivica Pers. (Palmae).*

Compar mangae 217, t. 82, f. 1=Palmae indet.

Cocus maldivicus minor 218, t. 82, f. 2, 3 = Palmae indet.

Cocus melindanus verus 219, t. 82, f. 4=Palmae indet.

Calapput laut 219=Palmae indet.

VOLUME VII (AUCTUARIUM)

Mangostana celebica 1=Garcinia celebica Linn. (Guttiferae).

Mirobalanus embilica 1, t. 1=Phyllanthus emblica Linn. (Euphorbiaceae).

Nagassarium 3, t. 2=Mesua ferrea Linn. (Guttiferae).

Boa massy 5, $t. 3 = Cubilia \ cubili \ Merr. (Sapindaceae)$.

Radix etter 6, t. 4=indet.

Arbor sebi 7=Dysoxylum sp. (Meliaceae).

Morus indica 8, t. 5=Morus alba Linn. (Moraceae).

Cortex acris 9=?

Cortex igneus 10, t. 6, f. 1=? Pittosporum sp. (Pittosporaceae).

Caja panu 12, t. 6, f. 2=Psychotria sp. (Rubiaceae).

Cortex foetidus 12, t. 7=Pittosporum moluccanum Mig. (Pittosporaceae).

Cortex filarius 13 = Gyrinopsis brachyantha Merr. (Thymelaeaceae).

Camean 14, t. 8, f. 1=?

Arbor nussalavica 14, t. 8, f. 2 = Dysoxylum sp. (Meliaceae).

Oleander sinicus 15, t. 9, f. 1=Nerium odorum Mill. (Apocynaceae).

Pariens muscarum 16, t. 9, f. 2=? (sub. Symplocos).

Arbor vespertilionum 17=Helicia serrata R. Br. (Proteaceae).

Arbor vespertilionum II oppositifolia 17, t. 10=Schizomeria serrata Hochr. (Cunoniaceae).

Pauw (incl. maxima, minima, media) 18, t. 11=Mangifera rumphii Pierre. (Anacardiaceae).

Xylophyllos ceramica 19, t. 12=Exocarpus epiphyllanthus Merr. (Santa-laceae).

Ayassa 20=? (sub. Tetracera, Dillenaceae is prob. Evodia sp., Rutaceae). Lignum vinosum 21=?

Bangel boaja 22 = ?

Stercus squillarum 22=?

Hystrix frutex 22, t. 13=Barleria prionitis Linn. (Acanthaceae).

Madorius 24, t. 14, f. 1=Calotropis gigantea Dry. (Asclepiadaceae).

^{*}Book 12, pages 193-256, tt. 77-90, is entitled "De arbusculis agens marinis & plantis saxosis seu de Lithodendris & Lithophytis." The forms described and figured are various alcyonarians, corals, sponges, etc., with the exception of the fruits of certain palms here listed.

Catsjopiri 26, t. 14, f. 2=Gardenia augusta Merr. (Rubiaceae).

Lussa radja 27, t. 15=Brucea amarissima Merr. (Simarubaceae).

Radix mustelae 29, t. 16=Rauwolfia serpentina Hook. f. (Apocynaceae).

Fructus regis 32, t. 17, f. 1=Helicteres isora Linn. (Sterculiaceae).

Cheramela 34, t. 17, f. $2 = Cicca \ acida \ Merr. \ (Euphorbiaceae)$.

Herpetica 35, t. 18=Cassia alata Linn. (Leguminosae).

Spina spinarum I mas 36, t. 19, f. 1, 2=Flacourtia indica Merr. (Flacourtiaceae).

Spina spinarum II femina 37=Flacourtia indica Merr. (Flacourtiaceae).

Tsjuilang 38=Aglaia odorata Lour. (Meliaceae).

Oxyacantha javana 39, t. 19, f. 3=? Carissa carandas Linn. (Apocynaceae).

Spina pectinata 39=? Carissa carandas Linn. (Apocynaceae).

Terminalis rubra silvestris 40, t. $20 = Taetsia\ fruticosa\ Merr.\ (Liliaceae)$.

Campana rubra 42=? Pandorea sp. (Bignoniaceae).

Radix sinica 42, t. 21, f. 1=Panax ginseng C. A. Mey. (Araliaceae).

Tjutsjau javanicum 50, t. 21, f. 2=Salvia plebeia R. Br. (Labiatae).

Soechas pilosa 51, t. 22, f. 1=Adenosma capitatum Benth. (Scrophula-riaceae).

Cassutha cornea 52=Marasmius sp. (Hymenomycetineae).

Tubu-tubu 52, t. 22, f. 2=Tapeinochilus ananassae K. Sch. (Zingiberaceae).

Tingulong 54, t. 23, f. 1=Protium javanicum Burm. f. (Burseraceae).

Nanium calapparium 55, t. 23, f. 2=? Myrtaceae.

Malum aruanum 55, t. 24, f. 1=?

Caju gora aruanum 56, t. 24, f. 2=?

Palala aruana 56, t. 24, f. 3 = Horsfieldia sp. (Myristicaceae).

Carandas 57, t. 25 = Carissa carandas Linn. (Apocynaceae).

Flos siamicus 58, t. 26, f. 1=Telosma odoratissima Coville (Asclepiadaceae).

Scrotum cussi 59, t. 26, f. 2=?

Machilus angustifolia 60, t. 27, f. 1=Neolitsea amboinensis Merr. (Lauraceae).

Verbena rubra 60, t. 27, f. z=Aerva sanguinolenta Blume (Amaranthaceae).

Tsjikin 61, t. 28, f. $1=Lagerstroemia\ indica\ Linn.\ (Lythraceae)$.

Ossifraga lactea 62, t. 29 = Euphorbia tirucalli Linn. (Euphorbiaceae).

Laurus japanica 63=Cinnamomum sp. (Lauraceae).

Cinnamomum zeylanicum 64=Cinnamomum sp. (Lauraceae).

Culit Lawan 65=Cinnamomum culilawan Blume (Lauraceae).

Arbor camphorifera I vera 65, 68=Cinnamomum camphora T. Nees & Eberm. (Lauraceae).

Arbor camphorifera II occidentalis 65, 68=Dryobalanops camphora Colebr. (Dipterocarpaceae).

Smilax sarmentis spinulosis 72, t. 30=? Smilax china Linn. (Liliaceae).



ADDENDA

As indicated in the footnote on page 168, the specimens of Orchidaceae collected by Doctor Robinson could not be cited under the species to which they pertain as Doctor Smith's manuscript and all the specimens were left at Leiden. Doctor Smith did not consider it advisable to take the specimens with him on his return to Buitenzorg on account of the abnormal conditions brought about by the war. Doctor Smith's report on the Orchidaceae of the Herbarium Amboinense was written at Buitenzorg, without access to Robinson's specimens or to his manuscript report on Robinson's collection. A copy of his report sent from Leiden was lost in transit, but a second copy was sent later, which reached Buitenzorg about the middle of June. and Manila July 11, 1917. At the time of the receipt of this report in Manila, the present work was in page proof, so that it was impracticable to cite the specimens of Orchidaceae in their proper places. The specimens are cited below.

Platanthera susannae (Linn.) Lindl.

AMBOINA, Soja road and Way tommo, Robinson Pl. Rumph. Amb. 9, August 1 and 16, 1913, terrestrial, on grassy hillsides, altitude 20 to 150 meters.

Habenaria rumphii (Brongn.) Lindl.

AMBOINA, Soja road, Robinson Pl. Rumph. Amb. 11, August 1, 1913, terrestrial, on grassy hillsides, altitude 100 to 300 meters.

Anoectochilus reinwardtii Blume.

AMBOINA, Hitoe lama, Robinson Pl. Rumph. Amb. 19, November 5, 1913, sterile; from a cultivated plant originating in the adjacent hills.

Zeuxine amboinensis J. J. Sm.

Amboina, Way uri, Reliquiae Robinsonianae 1616, September 9, 1913, terrestrial, in river bottoms, altitude about 25 meters. Flowers white.

Coelogyne rumphii Lindl.

Amboina, Soja and Bato merah, Robinson Pl. Rumph. Amb. 7, August 24 and 31, 1913, altitude 150 to 300 meters.

Calanthe veratrifolia R. Br.

Amboina, Koeseokoesoe sereh, Robinson Pl. Rumph. Amb. 10, August 7 and 23, 1913, altitude 200 meters; terrestrial. Flowers white.

Spathoglottis plicata Blume.

Amboina, town of Amboina, Soja road, Batoe gadjah, and Hitoe messen, Robinson, Pl. Rumph. Amb. 15, Reliquiae Robinsonianae 1628, July, August, and November, 1913, terrestrial altitude 10 to 150 meters.

Dendrobium papilioniferum J. J. Sm.

Amboina, Wakal, on Sonneratia, Robinson Pl. Rumph. Amb. 13, November, 1913.

Dendrobium ephemerum J. J. Sm.

Amboina, Hitoe lama, Robinson Pl. Rumph. Amb. 19, November 5, 1913, Dendrobium moluccense J. J. Sm.

Amboina, Roemah tiga, Robinson Pl. Rumph. Amb. 12, July 20, 1913, epiphytic, usually on Calophyllum inophyllum at sea level. The flowers very dark red.

Dendrobium purpureum Roxb.

Amboina, Waë, Robinson Pl. Rumph. Amb. 5, November 29, 1913, altitude about 20 meters. Epiphytic, pendant, the flowers lilac, the sepals tipped with green.

Grammatophyllum scriptum (Linn.) Blume,

AMBOINA, Paso, Robinson Pl. Rumph. Amb. 6, October 29, 1913, epiphytic, altitude 10 meters. The flowers green with purple blotches; native name manumpang.

Phalaenopsis amabilis (Linn.) Blume.

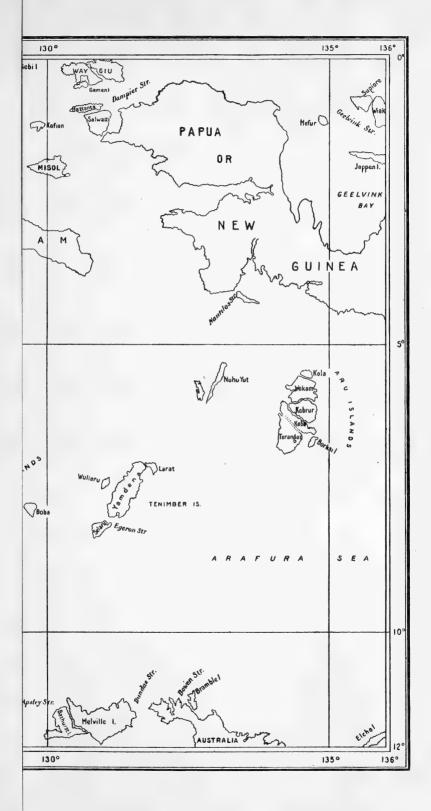
Amboina, Amahoesoe, Robinson Pl. Rumph. Amb. 8, August 30, 1913, epiphytic, altitude 4 to 8 meters. Flowers white, callosities on the lip with yellow margins and lilac spots.

Luisia confusa Reichb. f.

Amboina, Paso, Reliquiae Robinsonianae 1626, July 20, 1913, epiphytic, altitude 2 meters. Flowers yellowish-green, but the lip lilac-purple except for the yellow margin.

Renanthera moluccana Blume.

AMBOINA, Soja, Robinson Pl. Rumph. Amb. 20, September 27, 1913. Flowers orange-red, spotted all over with red, the tip of the column white. Native names bunga karang and manumpang karang.





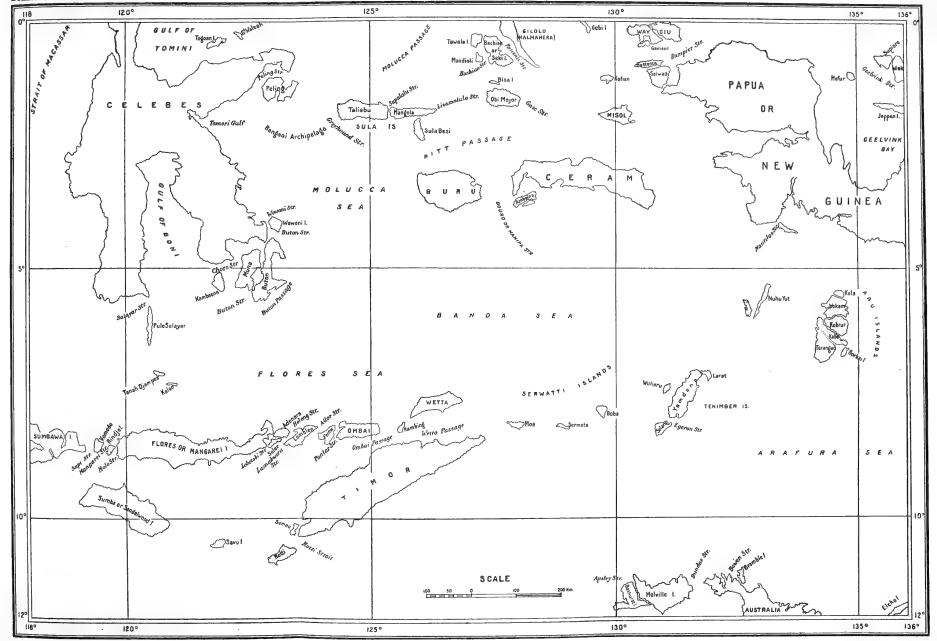


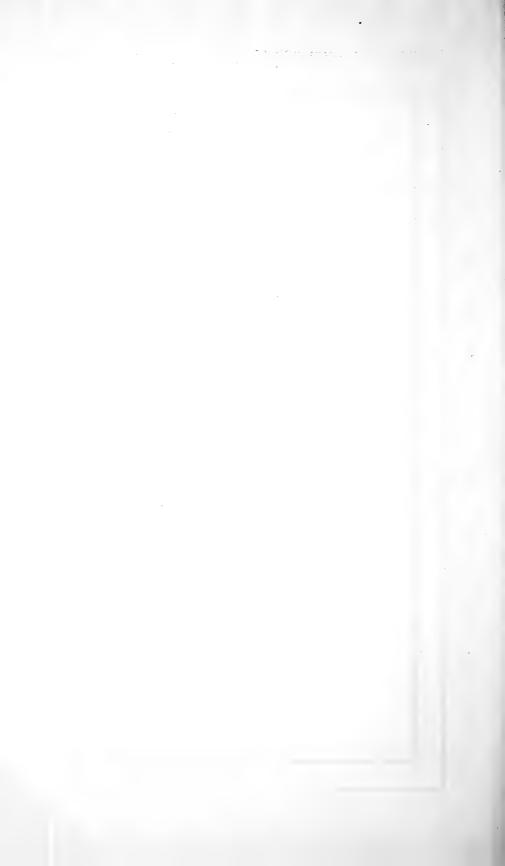
PLATE I. AMBOINA AND THE SURROUNDING ISLANDS.







PLATE II. AMBOINA ISLAND.



INDEX

[Synonyms and incidentally mentioned species are in italics.]

A

Aalius latifolia Rumph., 315. parvifolia Rumph., 314.

ABCdaria Rumph., 501.

Abelmoschus ficulneus W. & A., 358.

haenkeanus Presl, 48.

mindanaensis Warb., 358. moschatus Medik., 358.

Abies dammara Poir., 76. Abroma augusta Linn. f., 365.

fastuosa Jacq., 365.

fastuosa R. Br., 365. mollis DC., 365.

Abrus frutex Rumph., 274.

precatorius Linn., 274.

Abutilon albescens Miq., 356.

avicennae Gaertn., 355. graveolens Wight & Arn., 356.

hirsutum Rumph., 355.

hirtum (Lam.) Sweet, 355. indicum (Linn.) Sweet, 355.

laeve Rumph., 355.

litoreum Rumph., 356.

montanum Rumph., 357.

montanum e Capite bonae spei Rumph., 357.

sonnerationum Sweet, 357.

Abutua indica Lour., 77.

Acacia concinna DC., 251.

holosericea A. Cunn., 251.

hooperiana Zipp., var. subcuneata (Bl.) Miq., 252.

mangium Willd., 251.

rugata (Lam.) Ham., 251.

Acalypha amboynensis Benth., 322.

amentacea Roxb., 46, 322.

betulina Retz., 322.

bracteata Miq., 321.

densiflora Blume, 323.

fruticosa Forsk., 322.

grandis Benth., 322.

hispida Burm., f., 322.

mappa Willd., 319.

spiciflora Burm. f., 322, 323.

stipulacea Klotz., 322.

Acanthaceae, 470.

Acanthostemma rumphii Blume, 438.

Acanthus ebracteatus Vahl, 474.

ilicifolius Linn., 474.

volubilis Wall., 474.

Aceratium ganitri Hassk., 352. oppositifolium DC., 348.

Acetabulum marinum Rumph., 55.

marinum e Macassar Rumph., 56. marinum infundibuliforme Rumph., 55.

Acetosa hispanica, 210.

Achyranthes amaranthoides Lam., 211.

aspera Linn., 46, 214.

bidentata Blume var. elongata Hassk.,

chinensis Osbeck, 46.

fruticosa Lam., 215.

javanica Moq., 215.

lappacea Linn., 214.

muricata Linn., 211.

prostrata Linn., 214.

sanguinolenta Linn., 214. spiciflora Burm., 46, 322.

Acorum palustre et terrestre Rumph., 126.

Acorus calamus Linn., 126.

calamus Linn., var. terrestris Engl., 126.

calamus Lour., 126.

cochinchinensis Schott., 126.

marinus Rumph., 84.

terrestris Spreng., 126.

Acrocephalus capitatus Benth., 467. Acronychia laurifolia Blume, 394.

serrata Hochr., 244.

Acrostichum auritum Sw., 64.

dichotomum Linn., 69.

floridum Poir., 64.

siliquosum Linn., 68.

tenue Retz., 66.

thalictroides Linn., 68.

Actinodaphne angustifolia Nees, 238.

rumphii Blume, 238.

moluccana Blume, 238.

Actinorhytis calapparia (Blume) H. Wendl., 121, 123.

Actoplanes canniformis K. Schum., 166.

ridleyi K. Schum., 166.

Adamaram Adans., 390.

Adenanthera circinalis DC., 248.

falcata Linn., 248.

falcataria Linn., 248, 249.

pavonina Linn., 252.

Adenosma capitatum Benth., 467.

Adenostemma lavenia (Linn.) O. Kuntze, 497. viscosum Forst., 497, 501.

Adianthum volubile I polypoides Rumph., 69. volubile III minus Rumph., 70.

Adiantum Linn., 67.

aethiopicum Thunb., 67.

capillus veneris Linn., 67.

opacum Copel., 67.

pulchellum, Blume, 67.

varians Poir., 66.

Adina fagifolia (Teysm. & Binn.) Valeton, 481.

Adpendix arborum Rumph., 125.

cuscuaria angustifolia Rumph., 83. cuscuaria latifolia Rumph., 126.

duplo folio Rumph., 124.

551

Adpendix-Continued. erecta Rumph., 129. laciniata Rumph., 127. porcellanica Rumph., 124. Adulterina Rumph., 464. Aechmandra blumeana Roem., 491. Aegiceras corniculatum (Linn.) Blanco, 413. ferreum Blume, 382. 414. floridum Roem. & Schultes, 414. majus Gaertn., 413. minus Gaertn., 413. nigricans A. Rich., 414. Aegle marmelos (Linn.) Correa, 293. Aerva sanguinolenta (Linn.) Blume. 214. Aeschynomene arborea Linn., 268. aspera Linn., 287. cannabina Retz., 265. coccinea Linn., 266. grandiflora Linn., 266. indica Linn., 265. indica Linn., var. aspera Hassk., 266. moluccana Kostel., 265. roxburghii Spreng., 265. sesban Linn., 265. theophrasti Rumph., 287. Afzelia bijuga A. Gray, 255. rhomboidea F.-Vill., 46. Agallochum officinarum Bauh., 381. officinarum Lam., 381. secundarium (coinamense et malaicense) Rumph., 381. sive calambac Rumph., 381. spurium album Rumph., 353. spurium Rumph., 353. spurium III, 353. Aganosma acuminata G. Don, 48. macrocarpa A. DC., 48. velutina A. DC., 48. Agaricus amboinensis Lam., 58. djamor Fries, 57. moschocaryanus Streinz, 60. sajor caju Fries, 56. tuber regium Fries, 57. Agarum corticosum Rumph., 56. lactucarium Rumph., 56. II s. bracteatum Rumph., 56. III funiculare s. foliatum Rumph., 55. Agasta asiatica Miers, 384. indica Miers, 384. Agathis alba (Lam.) Foxw., 75, 76, 77. beccarii Warb., 77. borneensis Warb., 77. celebica Warb., 77. dammara Rich., 76. loranthifolia Salisb., 76. macrostachys Warb., 77. Agati cannabina Desv., 265. grandiflora Desv., 266. Agave cantala Roxb., 144. cantula Roxb., 144. rumphii Hassk., 144. vivipara Linn., 144. Ageratum conyzoides Linn., 497.

Aglaia ganggo Miq., 311. ganggo Miq., forma amboinensis Miq., 311. laxiflora Miq., 311. odorata Lour., 292, 309. odoratissima Blume, 310. perviridis Hiern, 311. pinnata Druce, 310. silvestris (Roem.) Merr., 310. Aglaonema cuscuaria Mig., 126. marantifolium Blume, 129. oblongifolium (Roxb.) Kunth, 129. Agrimonia molucca Rumph., 501. Ailanthus integrifolia Lam., 299. moluccana DC., 299. Aira arundinacea Linn., 95. Aizoaceae, 217. Albizzia chinensis Merr., 49. falcata (Linn.) Backer, 249. littoralis T. & B., 250. moluccana Miq., 249. procera (Roxb.) Benth., 250. retusa Benth., 250. saponaria (Lour.) Blume, 249, stipulata Boiv., 49. Aleurites ambinux Pers., 324. laccifera Willd., 321. moluccana (Linn.) Willd., 200, 819, 324, triloba Forst., 324. Alga coralloides I Rumph., 54. coralloides sinensium Rumph., 56. Algae, 53. Alismorchis Thou., 170. Alismorkis Thou., 170. Allaeanthus luzonicus F.-Vill., 46. Alliaria Rumph., 308. Allophylus amboinensis Blume, 336. grossedentatus F .- Vill., 46. ternatus (Forst.) Radlk., 336. timorensis (DC.) Blume, 336 Alocasia indica Schott, 130. longiloba Miq., 130. macrorrhiza (Linn.) Schott, 130. montana Schott, 130. Aloe americana Rumph., 144. perfoliata Linn., var. vera Linn., 136. vera Linn., 136. vivipara Linn., 144. Aloexulum agallochum Lour., 381. Alphonsea arborea Merr., 48. philippinensis Merr., 48. Alpinia colossea K. Schum., 155. eremochlamys K. Sch., 153. eubractea K. Sch., 155. eubractea Val., 154. galanga (Linn.) Sw., 153. gigantea Blume, 153, 155, 161. gigantea Val., 154. magnifica Rosc., 159. malaccensis Rosc., 155. melichroa K. Schum., 161. moluccana Gagnep., 154.

INDEX

Amomum-Continued Alpinia-Continued. hupoleucum Thw., 160. nobilis Ridl., 155. nutans (Linn.) Rosc., 154. latifolium Lam., 164. magnificum (Rosc.) Benth. & Hook. f., oceanica Burkill, 154. papuana K. Schum., 154. 159. maximum Bl. 159. papuana Scheff., 155. maximum Roxb., 157. pyramidata Blume, 153, 156. rufa Naves, 46. montanum Koenig, 152. roseum (Teysm. & Binn.) Benth. & scabra Naves, 46. speciosa (Wendl.) K. Schum., 154. Hook. f., 157, 160. rumphii Smith, 159, 160. uviformis (Linn.) Horan., 156. Alsophila amboinensis v. A. v. R., 63. truncatum Gagnep., 157. rumphiana v. A. v. R., 63. uliginosum Koenig, 158. Alstonia hoedti T. & B., 428. villosum Lour., 157, 160. scholaris (Linn.) R. Br., 427. zedoaria Berg., 164. spectabilis R. Br., 427. zerumbeth Koenig, 164. subsessilis Miq., 427. zerumbet Linn., 152. Altera planta peruana Rumph., 252. zingiber Linn., 151. Alternanthera nodiflora R. Br., 215. Amorphophallus campanulatus (Roxb.) nodiflora R. Br. var. linearifolia Moq., Blume, 127, 128, 145. 215. sativus Blume, 127. sessilis (Linn.) R. Br., 215. variabilis Blume, 133. Altingia excelsa Noronha, 245. Ampacus angustifolia Rumph., 290. Alyxia laurina Gaudich., 430. angustifolius Rumph., 28, 336. latifolia Rumph., 289. stellata Roem., 430. Amara indica Rumph., 495. litorea(angustifolia) minorRumpa.. litorea Rumph., 341. 336. silvestris Rumph., 495. litorea prima Rumph., 336. sinica Rumph., 495. Ampelocissus arachnoidea (Hassk.) Planch., Amaranthaceae, 211. 342. Amaranthus gangeticus Linn., 213. indica Planch., 342. melancholicus Linn., 213. martini Planch., 342. oleraceus Linn., 213. Ampelopsis indica Blume, 342. polygamus Linn., 213. Amphicarpaea, 275. spinosus Linn., 213. Amudium Rumph., 412. tricolor Linn., 213. Amyris oleosa Lam., 303. tristis Linn., 212. protium Linn., 305. viridis Linn., 212, 213. zeylanica Retz., 304. Amarantus caudatus Rumph., 212. Anacardiaceae, 329. japonicus Rumph., 212. Anacardium longifolium Lam., 334. versicolor Rumph., 213. occidentale Linn., 333. vulgaris Rumph., 212. Anamirta cocculus (Linn.) Wight. & Arn., Amaryllidaceae, 140. 221. Amaryllis lineata Lam., 141. flavescens Miq., 222. rotundifolia Lam., 142. lemniscata Miers, 222. Ananas comosus (Linn.) Merr., 46, 133. zeylanica Linn., 141. Ambliglottis veratrifolia Blume, 170. sativus Schultes, 46, 133. Ambroma augusta Linn. f., 365. Ananassa sativa Lindl., 133. Anassa domestica Rumph., 133. Ambulia aromatica Lam., 466. Amerimnon P. Br., 270. silvestris Rumph., 82. Amica nocturna Rumph., 143. Anasser moluccana Lam., 243, \$80. Anassera moluccana Pers., 243, 380. Ammi copticum Linn., 411. glaucifolium Blanco, 412. rumphii Span., 380. Amoena moesta Rumph., 257, Andawas Rumph., 433. Andropogon acicularis Willd, 87. Amomum acre Val., 158. aculeatum Roxb., 46, 158, 159. aciculatus Retz., 87. cardamomum Linn., 157. amboinicus (Linn.) Merr., 88. cardamomum Willd., 157. caricosum Linn., 92. cardamon K. Sch., 157. caricosus Linn., 85. echinatum Baker, 160. circinnatus Hochst., 89. echinatum Willd., 160. citratus DC., 88. gracile Blume, 160. dulcis Burm. f., 104. gymnocarpum Val., 159. exaltatus R. Br., 89. hatuanum Naves, 46, 159. nardus Linn., 48, 85, 86. hochreutineri Val., 160. schoenanthus Linn., 88.

Andropogon-Continued.

Anthistiria frondosa R. Br., 89.

serratus Thunb., 88. gigantea Cav., 89. serratus Thunb., var. genuinus Hack., Anthocephalus indicus Rich., 482. macrophyllus (Roxb.) Haviland, 49, 484. morindifolius Korth., 484. serratus Thunb., subvar. major Hack., Antiaris innoxia Bl., 192. sorghum Brot., 87, 88. toxicaria (Pers.) Lesch., 192, 423. Anticholerica Rumph., 262. sorghum Brot., subsp. sativus Hack., 88. sorghum Brot., var. saccharatus (L.) Antidesma amboinense Miq., 316. Hack., 87, 88. bunius (Linn.) Spreng., 316. Aneilema monadelphum Kunth, 134. rumphii Tul., 316. vitiense Seem., var. petiolata stipulare Blume, 316. Clarke, 134. Apios, 275. Angiopteris amboinensis DeVr., 71, 78. Apium involucratum Roxb., 411. Angiospermae, 79, 179. Apocynaceae, 425. Angraecum album majus Rumph., 177. Apocynum agglomeratum Poir., 438. album minus Rumph., 174. foetidum Burm. f., 489. angustis crumenis Rumph., 174, 176. indicum Lam., 436. caninum s. undecimum Rumph., 175. odoratissimum Lour., 440. crumenatum Rumph., 173. reticulatum Linn., 436. decimum et angustifolium Rumph., 178. tiliaefolium Lam., 439. flavum nonum Rumph., 174. Aporetica ternata Forst., 336. flavum septimum Rumph., 174. Aporum roxburghii Griff., 173. flavum sextum moschatum s. odoratum Aquifolium indicum I mas Rumph., 474. Rumph., 174 indicum II femina Rumph., 474. gajang Rumph., 172. Aquilaria agallocha Roxb., 381. jamboe Rumph., 176. bancana Miq., 353. lanuginosum Rumph., 177. malaccensis Lam., 381. nervosum Rumph., 169. ovata Cav., 381. octavum et furvum Rumph., 178. secundaria DC., 381. pungens Rumph., 179. secundarium Rumph., 381. purpureum et nudum Rumph., 175. Araceae, 124. purpureum silvestre Rumph., 175. Arachis asiatica Lour., 267, quintum Rumph., 178. hypogaea Linn., 267. rubrum Rumph., 179. Arachnis flos aeris Rchb. f., 177. saxatile Rumph., 178. Araliaceae, 406. scriptum Rumph., 177. Aralia chinensis Linn., 346, 347. sediforme Rumph., 179. cochleata Lam., 409. taeniosum Rumph., 179. guilfoylei Cogn. & March., 410. longifolia Reinw., 408. terrestre alterum Rumph., 91, 170. maculata Truff., 410. terrestre primum album Rumph., 171. terrestre primum purpureum Rumph., nodosa Blume, 408. 171, 172. palmata Lam., 407. terrestre tertium Rumph., 143. spinosa Linn., 347. uniflorum Rumph., 177. umbellifera Lam., 406. Anguria indica Rumph., 492. umbraculifera Roxb., 408. indica altera Rumph., 492. Arbor alba major Rumph., 402. Anisaea medium Choisy, 444. alba minor Rumph., 402. Anisifolium Rumph., 293. aluminosa Rumph., 420. Anisomeles indica O. Kuntze, 459. calappoides sinensis Rumph., 75. ovata R. Br., 459. camphorifera I vera Rumph., 233. Anisum moluccanum Rumph., 289. camphorifera II occidentalis Rumph., Annonaceae, 225. 376. Annona mucosa Aubl., 229. coeli Rumph., 299. reticulata Linn., 229. conciliorum Rumph., 195. squamosa Linn., 229. eusanda Rumph., 198. Anoectochilus reinwardtii Blume, 169, 549. excoecans Rumph., 327. Anoma moringa Lour., 241. facum major Rumph., 416. facum minor Rumph., 507. morunga Lour., 241. Anona Rumph., 229. glutinosa Rumph., 447. sariffa Roxb., 46, 420, koring Rumph., 376. tuberosa Rumph., 229. lactaria Rumph., 432. Antheriscus Bernh., 411. lactaria terrestris Rumph., 432. cereifolium Hoffm., 411. mangifera V minor Rumph., 330. nigra latifolia Rumph., 227. Antherura rubra Lour., 392.

INDEX 555

Aristolochia gaudichaudii Duch., 210. Arbor-Continued nigra maculosa Rumph., 227. hastata Jack, 210. nigra parvifolia Rumph., 227. indica Linn., 210. moluccana Duchartre, 210. noctis Rumph., 482. roxburghiana Klotz., 210. noctis II Rumph., 483. nuda Rumph., 316. rumphii Kostel., 209. tagala Cham., 210. nussalavica Rumph., 309. ovigera femina Rumph., 239. timoriensis Decne., 210. ovigera mas Rumph., 239. zollingeri Miq., 210. palorum alba latifolia Rumph., 339. Artabotrys inodorus Zipp., 228. odoratissimus Blume, 227. palorum alba parvifolia Rumph., 337. suaveolens Blume, 227, 228. palorum nigra Rumph., 507. pete Rumph., 253. Artemisia grata Wall., 502. latifolia Rumph., 502. pinguis Rumph., 327. pudica Rumph., 252. latifolia rubra Rumph, 502. roxburghiana Bess., 502. radulifera Rumph., 291. rediviva Rumph., 348, 349. vulgaris Linn., 502. regis Rumph., 326. Artocarpus camansi Blanco, 190. rubra I Rumph., 399. champeden (Lour.) Spreng., 190. rubra I angustifolia Rumph., 399. communis Forst., 190, 191. rubra II Rumph., 398. elastica Reinw., 191. rubra II saxatilis Rumph., 399. fretisii Teysm. & Binn., 46, 191. rubra III Rumph., 396. hirsuta Lam., 192. rubra IV Rumph., 399. incisa Linn. f., 190. sebi Rumph., 309. integra (Thunb.) Merr., 190. spiculorum angustifolia Rumph., 238. integrifolia Linn. f., 190. jaca Lam., 190. spiculorum aeruginea Rumph., 238. spiculorum latifolia Rumph., 238. lakoocha Roxb., 191. toxicaria femina Rumph., 192. polyphema Pers., 190. reticulata Miq., 191. toxicaria mas Rumph., 192. tsjang Rumph., 111. rima Blanco, 190. vernicis Rumph., 331. Arum aegyptium Rumph., 131. versicolor Rumph., 401. aquaticum Rumph., 129. vespertilionum Rumph., 205. arborescens Linn., 130. vespertilionum II oppositifolia Rumph., campanulatum Roxb., 127, 128. colocasia Linn., 131. violaria Rumph., 224. divaricatum Linn., 128, 132. zeylanica Rumph., 304. esculentum Linn., 131. Arcangelisia flava (Linn.) Merr., 222. · indicum Lour., 131. inclyta Becc., 222. indicum Roxb., 131. lemniscata Becc., 222. indicum sativum Rumph., 130. macrorrhizon Linn., 130. Ardisia disticha A. DC. 49. Arduina Mill., 425. mucronatum Lam., 130. Areca calapparia Blume, 121. ovatum Linn., 129. peltatum Lam., 131. catechu Linn., 123. glandiformis Lam., 123. peregrinum Linn., 129. globulifera Lam., 122. rumphii Gaudlich., 127. gracilis Giseke, 120. sagittifolium Linn., 131. humilis Willd., 121. silvestre I latifolium Rumph., 130. olivaeformis Giseke, 120. silvestre II medium Rumph., 130. oryzaeformis Gaertn., 122, 123. trilobatum Linn., 132. oryzaeformis Giseke, 122. trilobum Linn.. 132. paniculata Scheff., 121. Arundarbor alba Rumph., 98. punicea Blume, 122. amahussana Rumph., 99. saxatilis Burm., 121. aspera Rumph., 101. cratium Rumph., 102. spicata Lam., 119. sylvestris Lour., 122. fera Rumph., 99. vaginata Giseke, 120. fera elegantissima Rumph., 100. vestiaria Giseke, 121. fera nigra Rumph., 103. Arenga gamuto Merr., 119. fera silvestris Rumph., 103. fera s. Arundo japanica Rumph., 103. pinnata (Wurmb) Merr., 119. saccharifera Labill., 119. fera s. bulu tsjatjar Rumph., 103. Arisarum amboinicum Rumph., 132. fera s. cha Rumph., 103. esculentum Rumph., 129. lineata Rumph., 98. Aristolochiaceae, 209. maxima Lour., 100.

officinalis Linn., 456.

Arundarbor-Continued. Avicennia alba Blume, 456. maxima Rumph., 100. nigra Rumph., 98. prava Rumph., 98. spiculorum Rumph., 102, 103. spinosa Rumph., 97. tenuis Rumph., 98. tenuis amahussana, Rumph., 99. vassaria s. Bulu Java Rumph., 99. Arundastrum Rumph., 166. Arundinella I minor Rumph., 134. II major Rumph., 134. III aquatica Rumph., 135. IV Rumph., 134. V Rumph., 135. Arundo agrestis Lour., 97. arbor tenuis alba, 98. arbor tenuis nigra, 98. arbor tenuis prava, 98. bambos Lour., 100. farcta I Rumph., 85. farcta II Rumph., 86. fax Lour., 102. mitis Lour., 99, 100. multiplex Lour., 99. phragmites Linn., 95. saccharifera Rumph., 86. saccharifera III, 86. tabacaria Lour., 102. vulgaris Lam., 95. Arupa Rumph., 415. Arytera litoralis Blume, 50. montana Blume, 49. Ascarina rubra Poir., 190. Asclepiadaceae, 434. Asclepias gigantea Linn., 435. odoratissima Roxb., 440. sussuela Roxb., 438. Asparagus terminalis Linn., 137. Aspidium amboinense Willd., 73. ferox Blume, 64. repandum Willd., 64. Asplenium nidus Linn., 65. Astronia papetaria Blume, 405. Atalantia longispina Kurz, 295. monophylla DC., 294. spinosa Hook. f., 295. Athamantha macedonica Spreng., 411. Athyrium esculentum (Retz.) Copel., 65, 476. Atunus Rumph., 247. albus Rumph., 248. litorea Rumph., 365. Aurantium acidum Rumph., 298. acidum II, III, 298. maximum Burm., 46, 296. pumilum madurense Rumph., 298. sinense Rumph., 298. sinense II Rumph., 298. verrucosum Rumph., 298. Auris canina I femina Rumph., 214. canina II mas Rumph., 214. Averrhoa acida Linn., 309, 314. bilimbi Linn., 287. Bancudus angustifolia Rumph., 490. carambola Linn., 287.

Axonopus semialatus Hook. f., 49. Ay-assa Rumph., 367, 509. Aylaun nya femina Rumph., 203. Aulilin Rumph., 509. Azaola leerii Teysm. & Binn., 415. Baccaurea bracteata Muell.-Arg., 316. nanihua Merr., 315. philippinensis Merr., 316. ramiflora Lour., 316. Baccharis indica Linn., 500. salvia Lour., 498. Baeckea virgata Andr., 402. Baeobotrys tetrandra Roxb., 412. Baeumerta Gaertn., 240. Balanostreblus ilicifolia Kurz, 188. Balsamaria inophyllum Lour., 371. Balsaminaceae, 340. Balsamina fasciculata DC., 341. hortensis Desp., 341. tilo DC., 341. Bambusae, 96. Bambusa agrestis Poir., 98. amahussana Lindl., 99. arundinacea Willd., 97. arundinacea Retz., 98, 100. aspera R. & S., 101. atra Lindl., 98. atra Lindl, var. amahussana (Lindl.) Merr., 99. balcooa Roxb., 100. bitung Roem. & Sch., 101. blumeana Schultes f., 97. excelsa Miq., 100. fera Miq., 99. lineata Munro, 98, 99. longinodis Miq., 102. maxima Poir., 100. mitis Poir., 100. multiplex Raeusch, 99. nigra Lodd., 103. nutans Wall., 99. picta Lindl., 98. prava Lindl., 98. rumphiana Kurz, 98, 99. spinosa Blume, 97. spinosa Roxb., 97. striata Lodd., 100. tabacaria Poir., 102. teba Miq., 97. tenuis Munro, 98. vasaria Munro, 99. verticillata Willd., 98, 99. vulgaris Schrad., 99. vulgaris Schrad., var. striata (Lodd.) Gamble, 100. Bancalus Rumph., 483. mas Rumph., 483. mas s. parvifolius Rumph., 483. media Rumph., 483.

latifolia Rumph., 490.

INDEX 557

Bixaceae, 376. Bangleum Rumph., 152. Bangle malacca Rumph., 155. Bixa orellana Linn., 376. Blackwellia foetida Wall., 378. Banksia musculiformis Gaertn., 425. moluccana Blume, 378. speciosa Koenig, 164. Blatti Adans., 383. Barba saturni Rumph., 62. Blechnum orientale Linn., 66. Barleria hystrix Linn., 472. Bleekeria sah bric Hassk., 431. prionitis Linn., 472. Bartramia indica Linn., 355. Blimbingum suvestre Rumph., 348. teres Rumph., 287. Barringtonia acutangula Gaertn., 385. Blitum brasilianum Rumph., 509, alba Blume, 385. alba Kostel., 385. frutescens Rumph., 211. asiatica (Linn.) Kurz, 384. indicum domesticum Rumph., 212. indicum I album Rumph., 212. incluta Miers. 385. racemosa (Linn.) Blume, 385. indicum II maculosum Rumph., 212. indicum II maculosum amboinicum. rubra Blume, 385. Rumph., 212. speciosa Forst., 384. Baryxylum rufum Lour., 255. indicum III rubrum Rumph., 213. indicum IV terrestre Rumph., 213. Basellaceae, 218. peruvianum Rumph., 211. Basella alba Linn., 218. spinosum Rumph., 213. nigra Lour., 218. Blumea appendiculata DC., 498. rubra Linn., 218. aromatica DC., 498. Basilicum agreste Rumph., 461. balsamifera (Linn.) DC., 498. indicum hortense Rumph., 460. chinensis (Linn.) DC., 497, 499, 500. Bassia dubia Gaertn., 418. macrophylla DC., 498. longifolia Lam., 416. Boa massy Rumph., 338. Batatas edulis Choisy, 443. Bobea wallichiana Kostel., 486. Batatta Rumph., 443. Bocoa edulis Baill., 273. mammosa Rumph., 442. Bodelha Rumph., 56. Batis spinosa Roxb., 189. altera Rumph., 54. Bauhinia glauca Wall., 256. Boerlagiodendron palmatum (Lam.) Harms, lingua DC., 256. scandens Linn., 256. Beesha fax R. & S., 102. Boehmeria nivea (Linn.) Gaudich., 202. tenacissima Gaudich., 202. humilis Kunth, 102. Boeloe rottang Rumph., 101. Begoniaceae, 379. Begonia mollis A. DC., 380. Boletus II arboreus Rumph., 57. II umbraculiforma Rumph., 60. obliqua Linn., 379. IV terrestris Rumph., 60. rubra Blume, 380. tuberosa Lam., 379. V auris murina Rumph., 60. Belou Adans., 293. moschocaryanus Rosenthal, 60. Benincasa cerifera Savi, 493. moschocaryanus Rumph., 60. primus infundibuli forma hispida (Thunb.) Cogn., 493, 495. (figura) Rumph., 56. Bergera Koenig, 292. sanguineus Linn., 59. koenigii Linn., 408. Bidara syringaefolia Decne., 435. Bololo maluhi Rumph., 486. tingens Decne., 436. Bombacaceae, 361. Bidens bipinnata Linn., 501. Bombax aculeatum Linn., 46, 362. pentandrum Linn., 362. chinensis Willd., 501. peduncularis Gaudich., 502. Bonnaya veronicaefolia Spreng., 467. pilosa Linn., 501. Boraginaceae, 447. wallichii DC., 502. Borassus caudata Lour., 121. Bignoniaceae, 469. flabellifer Linn., 112. Bignonia longissima Lour., 469. flabelliformis Murr., 112. spathacea Linn., f., 469. gomutus Lour., 119. Bilacus Rumph., 293. ihur Giseke, 112. amboinensis silvestris Rumph., 294. sonnerati Giseke, 112. marmelos O. Kuntze, 293. sylvestris Giseke, 110. taurinus Rumph., 293. Borreria discolor DC., 50. Bintangor maritima Rumph., 371. Boschia Korth., 235. montana Rumph., 371. Boswellia balsamifera DC., 301. silvestris Rumph., 371. hirsuta DC., 302. silvestris altera Rumph., 371. Botor tetragonoloba O. Kuntze, 286. silvestris tertia Rumph., 371. Botrychium zeylanicum Willd., 71. Botrymorus paniculata Miq., 203. Biophytum sensitivum (Linn.) DC., 288.

Brassaia littorea Seem., 408.

Bissula Rumph., 111.

Brassica juncea (Linn.) Coss., 240. pekinensis Skeels, 240. Breweria alsinoides F.-Vill., 46. Brevnia cernua (Poir.) Muell.-Arg., 314. Briza elegans Osbeck, 46. Bromeliaceae, 133. Bromelia ananas Linn., 133. comosa Linn., 46, 133. Broussonetia papyrifera Vent., 188. Brucea amarissima (Lour.) Merr., 299. sumatrana Roxb., 299. Bruguiera caryophylloides Blume, 386, 388. conjugata (Linn.) Merr., 386, 388. cylindrica (Linn.) Blume, 386, 388, 389. eriopetala W. & A., 386, 389. gymnorhiza Blume, 389. gymnorhiza Lam., 386, 388. gymnorhiza Lam., var. palun Blume, 388. parviflora W. & A. 386. rheedi Blume, 389. rumphii Blume, 388. sexangula (Lour.) Poir., 386, 389. Bryonia cordifolia Linn., 343, 495. grandis Linn., 495. Bryophyllum calycinum Salisb., 243. pinnatum Kurz, 243. Bubon macedonicus Linn., 411. Buchanania amboinensis Miq., 506. arborea Blume, 506. Buglossum lanuginosum Rumph., 448. litoreum Rumph., 496. Bulbophyllum Thouars, 177. carinatum Naves, 46. grandiflorum Blume, 177. purpureum Naves, 46. Bulbostylis barbata Kunth., 48. Bungum femina Rumph., 475. mas Rumph., 473. Bunius agrestis Rumph., 316. sativa domestica Rumph., 316. Burneya C. & S., 486. Burseraceae, 300. Bursera ? nitida F.-Vill., 47. Butonica Rumph., 384. rubra Miers, 385. rumphiana Miers, 384. terrestris Miers, 385. terrestris alba Rumph, 385. terrestris rubra Rumph., 385. Cacalia procumbens Lour., 499.

Cacalia procumbens Lour., 499.
sonchifolia Linn., 503.
Cacara Rumph., 286.
alba Rumph., 286.
bulbosa Rumph., 285.
erosa O. Kuntze, 285.
litorea Rumph., 280, 281.
nigra Rumph., 279.
pilosa Rumph., 279, 280.
pruritus Rumph., 277.
Cactaceae, 380.
Cadamba nocturna Ham., 47, 482.
Cadelium Rumph., 274.

Caesalpinia bonduc Auctt., 260. bonducella Flem., 260. crista Linn., 260, 261. glabra Merr., 261. jayabo Maza, 47, 261. jayabo Maza, var. cyanosperma Maza, 260. nuga (Linn.) Ait., 260, 261. pulcherrima (Linn.) Sw., 260. sappan Linn., 259. Cajan inodorum Medic., 282. Cajanus bicolor DC., 282. cajan (Linn.) Millsp., 282. indicus Spreng., 282. Caju bandaa Rumph., 192. cawan e Java Rumph., 376. djurang Rumph., 198. galedupa Rumph., 254, 271. gora aruana Rumph., 510. jati Rumph., 450. kelam Rumph., 403. lape lape Rumph., 334. lapia Rumph., 368. lapia soyanansium Rumph., 369. panu Rumph., 488. pinnatum O. Kuntze, 271. ticos leytimorensis Rumph., 250. Cajuputi Adans., 402. Caladium aquatile Rumph., 131. bicolor Vent., 132. esculentum Vent., 131. esculentum Vent., var. aquatilis Hassk., nymphaeifolium Willd., 131. Calamagrostis Rumph., 89. Calambac Rumph., 381. Calamus acidus Becc., 117. adspersus Blume, 115. albus Pers., 115. amboinensis Miq., 117. aruensis Becc., 116. barbatus Blume, 117. buroensis Mart., 116. calapparius Mart., 117. cawa Blume, 116. dioicus Lour., 116. draco Willd., 118. equestris Willd., 116, 117. fasciculatus Roxb., 116. graminosus Blume, 115. holrungii Becc., 116. javensis Blume, 117. latifolius Roxb., 117. litoralis Blume, 116. maritimus Blume, 117. niger Willd., 118. oblongus Linn., 117. oblongus Reinw., 116, 117. palustris Griff, 115. petraeus Lour., 117. pisicarpus Blume, 116. platyacanthos Mart., 116. rotang Linn., 115, 116, 117, 118. rudentum Lour., 115, 118. rumphii Blume, 115. scipionum, 118.

Canarium-Continued. Calamus-Continued. indicum Linn., 47, 301. strictus Blume, 116. legitimum (Blume) Miq., 300, 302. verus Lour., 116. viminalis Willd., 116. mehenbethene Gaertn., 301. viminalis e Burone Rumph., 116. microcarpum Willd., 303. moluccanum Blume, 301. zalacca Gaertn., 114. nigrum Roxb., 302. Calanthe furcata Batem., 170. nigrum Engl., 304. sylvatica Lindl., 170. triplicata Ames, 170. odoriferum hirsutum Rumph., 302. veratrifolia R. Br., 170, 549. odoriferum leve Rumph., 301, 305. Calappa Rumph., 123. oleosum (Lam.) Engl., 303. pimela König, 304. Calapput laut Rumph., 124. Calla calyptrata Roxb., 129. rostratum Zipp., 302, 303, oblongifolia Roxb., 129. silvestre alterum Rumph., 303. sinense I Rumph., 304. occulta Lour., 128. Callicarpa cana Linn., 449. sinense II Rumph., 304. sinense III Rumph., 305. cuspidata Roxb., 448. sylvestre Gaertn., 303. lanata Linn., 448. vulgare Rumph., 301. longifolia Lam., 449. pedunculata R. Br., 448. zephyrinum Blume, 47, 304. tomentosa Murr., 448. zephyrinum Rumph., 304. Callista Lour., 173. zeylanicum (Retz.) Blume, 304. Canavalia cathartica Thouars, 282. Callitriche verna Linn., 509. Calodium cochinchinensis Lour., 239. ensiformis DC., 282. Calodracon terminalis Planch., 137. gladiata (Jacq.) DC., 281. Calophyllum acuminatum Lam., 371. gladiata DC., var. machaeroides DC., bintagor Roxb., 371. 281. calaba Linn., 371. lineata (Thunb.) DC., 281. machaeroides DC., 281. inophyllum Linn., 371. nagassarium Burm., f., 370. microcarpa (DC.) Merr., 280. soulattri Burm., f., 371. obtusifolia DC., 281. spectabile Willd., 371. turgida Grah., 280, 281. spurium Choisy, 418. Candarum Reichb., 127. Calostemma luteum Sims, 143. Cannaceae, 165. Calotropis gigantea (Linn.) Dryand., 434. Canna angustifolia Linn., 165. Calpicarpum lamarckii Don, 431. coccinea Ait., 165. Calyptranthes caryophyllifolia Willd., 395. fistula javanica Rumph., 259. jambolana Willd., 394. indica Linn., 165. Calyptrocalyx spicatus (Lam.) Blume, 119. orientalis Rosc., 165. Cambogia gutta Linn., 373. palustris Rumph., 95. Camean Rumph., 509. patens Rosc., 165. Camirium Rumph., 324. Cannabis indica Lam., 199. Camolenga Rumph., 493. indica Rumph., 199. Campana rubra Rumph., 469. indica tertia Rumph., 199. Camunium japonense Rumph., 292. sativa Linn., 199. javanicum Rumph., 292. sativa Linn., var. crispata Hassk., 199. sinense Rumph., 309. Cannacorus Rumph., 165. vulgare Rumph., 292. Cantharifera Rumph., 242. Cananga Rumph., 226. alba Rumph., 242. odorata Hook. f., 226. Canthium indicum Dietr., 426. silvestris I trifolia Rumph., 228. Capellania moluccana Teysm. & Binn., 326. silvestris II angustifolia Rumph., 226. Capillus nympharum Rumph., 53. silvestris III latifolia Rumph., 228. veneris amboinicus Rumph., 67. Capparidaceae, 240. Canangium odoratum (Lam.) Baill., 226. Canariopsis hirsuta Miq., 302. Capparis carandas Burm. f., 425. decumana Miq., 300. Capraria Rumph., 305. glabra Miq., 301. crustacea Linn., 468. paucijuga Miq., 305. gratissima Roxb., 466. Canarium acutifolium (DC.) Merr., 302. Caprificus amboinensis esculenta angustifolia Rumph., 198. album (Lour.) Räusch, 304. balsamiferum Willd., 301. amboinensis esculenta latifolia Rumph., commune Linn., 47, 301, 304. decumanum Gaertn., 300. amboinensis esculenta silvestris Rumph., decumanum Rumph., 300. hirsutum Willd., 302. amboinensis esculenta s. hahuol altera hispidum Blume, 302. Rumph., 198.

Caprificus-Continued. Caryophyllus aromaticus Linn., 393. silvestris Teysm., 47, 393. aspera angustifolia Rumph., 193. aspera latifolia Rumph., 193. Caryospermum moluccanum Blume, 335. aspera tertia Rumph., 193. Caryota javanica Osbeck, 47. sive sycomorus chartaria (amboinensis) rumphiana Mart., 118. Rumph., 198. urens Linn., 118, 119. chartaria (javanica) sive sucomorus Cassia alata Linn., 257. Rumph., 198. alata Linn., var. rumphiana DC., 257. viridis major Rumph., 195. angustissima Lam., 257. viridis minor Rumph., 196. bacillus Gaertn., 259. Capriola dactylon O. Ktze., 93. chinensis Lam., 258. Capsicum frutescens Linn., 462. fistula Linn., 259. frutescens Linn., var. baccatum (Linn.) fistula Rumph., 259. Irish, 462. fistula silvestris Rumph., 259, 433. indicum Rumph., 462. glauca Lam., 258. silvestre Rumph., 428. javanica Linn., 259, 433. Carandas Rumph., 425 marginata Roxb., 259. Caranga amara Vahl, 467. mimosoides Linn., 257. Carapa indica Juss., 306. mimosoides Linn., var anaustissima moluccensis Lam., 306, 307. (Lam.) Walp., 257. obovata Blume, 306. nictitans Linn., 257. rumphii Kostel., 307 nodosa Ham., 259. Carbonaria altera Rumph., 506. obtusifolia Linn., 257. altera litorea Rumph., 506. occidentalis Linn., 258. femina Rumph., 506. planisiliqua Burm. f., 258. mas Rumph., 505. planisiliqua Linn., 258. Cardaminium Moench., 240. procumbens Linn., 257. Cardamomum minus Rumph., 157. sophera Linn., 258, Cardamon majus Rumph., 157. tora Linn., 257. medium sive minus Rumph., 157. Castalia pubescens Blume, 219. verum fructibus minimis trigonis Rumph., stellata Blume, 219. 157. Cassutha cornea Rumph., 57. Cardiocarpus amarus Reinw., 300. Cardiopteryx moluccana Blume, 335. Cassumbium spinosum Ham., 47. Cardiospermum halicacabum Linn., 336. Cassuvium Rumph., 333. halicacabum Linn., var. microcarpum pomiferum Lam., 333. Blume, 336. silvestre Rumph., 334. Carex amboinica Rumph., 83. silvestre s. Lau Lassi Rumph., 334. amboinica I major Rumph., 108. Cassytha corniculata Burm. f., 57. amboinica II minor Rumph., 107. filiformis Linn., 239. amboinica III Rumph., 108. Casuarinaceae, 179. arborea Rumph., 83. Casuarina celebica Rumph., 180. culmaris Rumph., 106. equisetifolia Linn., 180. laevis major Rumph., 107. litorea Rumph., 180. laevis minor Rumph., 106. montana Rumph., 179. tuberosa Blanco, 104. nodiflora Forst., 180. Caricaceae, 378. rumphiana Miq., 179. Carica papaya Linn., 378. sumatrana Jungh., 180. Carissa carandas Linn., 48, 425. Catappa domestica Rumph., 390. spinarum Linn., 425. silvestris altera Rumph., 380. Carpacanthus herbaceus Kütz., 55. silvestris litorea Rumph., 390. Carpopogon giganteum Roxb., 227. Catesbaea javanica Usbeck, 47. pruriens Roxb., 277. Cathartocarpus fistula Pers., 259. Carthamus tinctorius Linn., 503. Catsjopiri Rumph., 485. Carum Rumph., 412. Catti marus Rumph., 363. copticum (Linn.) Benth., 41. Caturus spiciflorus Linn., 322, 323. roxburghiana Benth., 412. Cauda felis agrestis alba Rumph., 322. Carumbium amboinicum Mig., 327. felis agrestis rubra Rumph., 322. populneum Muell.-Arg., 327. felis domestica Rumph., 323. Caryophyllaster albus Rumph., 392. felis saxatilis Rumph., 507. litoreus Rumph., 340. Caulerpa racemosa f. macrophysa Weber, 56. ruber Rumph., 392. Caryophyllum Rumph., 393. Cayratia carnosa Gagnep., 345. regium Rumph., 393. geniculata Gagnep., 345. silvestre Rumph., 393. Ceanothus asiaticus Linn., 341.

Cedrela febrifuga Blume, 305. Cingulum terrae Rumph., 71. febrifuga Blume var. inodora (Hassk.) Cinnamomum camphora (Linn.) T. Nees & Eberm., 233, 376. C. DC., 206. inodora Hassk., 306. caryophylloides ruber Rumph., 233. toona Roxb., 306. culilawan Blume, 232 Ceiba pentandra (Linn.) Gaertn., 46, 362. culilawan Blume, var. rubrum (Blume) Meissn., 233. Celastraceae, 334. Celosia argentea Linn, 212. dulce Nees, 233, baccata Retz., 211. japanicum II Rumph., 233, castrensis Linn., 212. javanicum Blume, 233. cristata Linn., 212. kaimis Nees, 239. cristata Linn., var. exaltata Hassk., 212. rubrum Blume, 233. cristata Linn., var. splendens Moq., 212. Celtis amboinensis Willd., 187. sintoc Blume, 233. sulphuratum Nees, 233. philippensis Blanco, 186. tamala T. Nees & Eberm., 233. Centella asiatica (Linn.) Urban, 411. xanthoneurum Blume, 233. Centrostemma multiflorum Decne., 439. zeylanicum Nees, 234, zeylanicum Rumph., 233. Cepa silvestris Rumph., 142. Cissus acida Murr., 345. Cephalanthus orientalis Linn., 483. Ceratolobus glaucescens Blume, 47. adnata Roxb., 344. javanicus Merr., 47. arachnoidea Hassk., 342. aristata Blume, 344. Ceratopteris thalictroides (Linn.) Brongn., 68. Cerbera lactaria Ham., 432. assamica Craib, 344. manghas Linn., 432. assamica Craib, var. pilosissima Gagnep., musculiformis Lam., 425. nereifolia Zipp., 75. blumeana Steud., 344. odollam Gaertn., 432. carnosa Lam., 345. oppositifolia Lam., 431. cinerea Lam., 346. salutaris Blume, 431. cordata Roxb., 343. Ceriops candolleana Arn., 386. crenata Vahl, 345. jorsteniana Blume, 387. geniculata Blume, 345. tagal C. B. Rob., 386. glauca Roxb., 344. zippeliana Blume, 387, 388. latifolia Lam., 343. Cerocarpus aqueus Hassk., 393. latifolia Vahl, 343. Chaetomorpha brachygona Harv., 53. pyrrhodasys Miq., 344. javanica Kütz., 53. quadrangularis Linn., 343. Chaetospermum glutinosum Swingle, 294. repens Lam., 343. Chalcas camuneng Burm. f., 292. rotundifolia Blume, 344. paniculata Linn., 292. sicyoides Linn., 343. Chamaebalanus japonica Rumph., 267. trifolia K. Sch., 345. Chamaerops humilis Linn., 119. trifoliata Lour., 344. Champereia manillana Merr., 48. trilobata Lam., 346. Champeu s. Campee Rumph., 90. Citrullus vulgaris Schrad., 492. Chauvinia macrophysa Kütz., 56. Citrus acida Roxb., 296. Chavica betle Miq., 182. amara Hassk., 298. amboinensis Miq., 182. angulata Willd., 294. majuscula Miq., 181. aurantifolia (Christm.) Swingle, 296. malamiris Miq., 184. aurantium Linn., 296, 298. officinarum Miq., 183. aurantium Linn., var. grandis Linn., 296. rumphii Miq., 181. aurantium Linn., var. limonum Risso, sphaerostachya Miq., 185. 298. Cheilanthes tenuifolia (Burm. f.) Sw., 66. aurantium Linn., var. vulgaris Risso, 298. bergamia Risso, 297. Chenopodiaceae, 211. Chenopodium quinoa Willd., 211. bergamia Risso, var. unguentaria Roem., Cheramela Rumph., 314. 297. Chilocarpus Blume, 426. bergamia Risso, var. ventricosa Roem., Chionanthus ghaeri Gaertn., 106. 298. Chlorophyceae, 53. bigaradia Risso, 298. Chrysanthemum indicum Linn., 502. decumana Linn., 46, 47, 296. Chrysobalanus icaco Linn., 332. decumana Linn., var. racemosa Roem., Cibotium baranetz J. Sm., 74. Cicadaria latifolia Rumph., 415. decumana Linn., var. verrucosa Miq., 298. Cicca acida (Linn.) Merr., 314. fusca Lour., 298. acidissima Blanco, 314. grandis Hassk., var. oblonga Hassk., 297. disticha Linn., 314. grandis Osbeck, 47, 296. nodiflora Lam., 314. hystrix DC., 297, 298. 144971----36

Citrus-Continued. Coccinea cordifolia (Linn.) Cogn., 495. inermis Roxb., 294. grandis Roem., 495. japonica Thunb., 294. indica W. & A., 495. javanica Blume, 296. loureiriana Roem., 495. lima Lunan, 296. Cocculus angustifolius Hassk., 186. limetta Risso, 298. crispus DC., 220. limetta Risso, var. auraria Risso, 298. flavescens DC., 222. forsteri DC., 220. limonellus Hassk., 296. limonellus Hassk., var. oxycarpus Hassk., glaucus DC., 219. 296. incanus Colebr., 219. ° limonia Osbeck, 47. lacunosus DC., 221. limonium Risso, 47, 298. Cocos maldivica Gmel., 112. macracantha Hassk., 299. nucifera Linn., 123. madurensis Lour., 294. Cocus maldivicus Rumph., 112. maxima (Burm.) Merr., 46, 47, 296. maldivicus minor Rumph., 124. medica Linn., 297. melindanus verus Rumph., 124. medica Risso, 298. Codiaeum bractiferum Roxb., 47, 825, 326. nobilis Lour., 298. brevistylum Pax & K. Hoffm., 326. nobilis Lour., var. melanocarpa Hassk., chrysosticton angustifolium Rumph., 325. chrysosticton latifolium Rumph., 325. nobilis Lour., var. microcarpa Hassk., chrysosticton medium Rumph., 325. 298. chrysosticton medium rubrum Rumph., notissimus Blanco, 296. 325. obversa Hassk., 297, chrysosticton rubro-maculatum Rumph., papeda Miq., 298. 325. pompelmus Risso, var. racemosus Risso, eruthrosticton parvifolium Rumph., 325. 298. nigrum medium Rumph., 325. sinensis Osbeck, 47. nigrum minus Rumph., 325. torosa Blanco, 297. parvifolium viride Rumph., 325. Citta nigricans Lour., 277. silvestre Rumph., 325, 326. Cladostachys arborescens Don, 212. simplex Rumph., 325. muricata Moq., 212. taeniosum Rumph., 325. Claoxylon indicum Hassk., 200, 322. variegatum (Linn.) Blume, 276, 325. polot (Burm. f.) Merr., 200. variegatum (Linn.) Blume, f. taeniosum Clausena punctata W. & A., 311. Muell.-Arg,, 325. Cleidion javanicum Blume, 322. Coelogyne nervosa Rich, 169. spiciflorum (Burm. f.) Merr., 322. psittacina Reichb., 169. Cleisostoma subulatum Blume, 179. rumphii Lindl., 169, 549. Clementea Cav., 280. Cofassus Rumph., 452. Cleome icosandra Linn., 241. alba Rumph., 452. pentaphylla Linn., 241. viscosa Linn., 240, citrina Rumph., 427. Clerodendron commersonii (Poir.) Spreng., femina Rumph., 452. 47, 422, 455. mas Rumph., 452. fallax Lindl., 455. Coix lachryma jobi Linn., 84, 86. inerme Auct., 455. Coleus amboinicus Lour., 458, 459. infortunatum Linn., 452, 455, 486. aromaticus Benth., 458, 459. neriifolium Wall., 455. atropurpureus Benth., 458. paniculatum Linn., 455. blumei Benth., 460. rumphianum DeVriese & Teysm., 456. parviflorus Benth., 459. speciosissimum Paxt., 455. scutellaroides (Linn.) Benth., 460. viscosum Vent., 455. suganda Blanco, 459. Clitoria ternatea Linn., 274. tuberosus (Blume) Benth., 459. Clompanus funicularis Rumph., 248. Collyris major Vahl, 437. major Rumph., 364. Colocasia antiquorum Schott, 131. minor Rumph., 364. esculenta (Linn.) Schott, 131, 132. molucanus Raf., 364. humilis Hassk., 129. paniculatus Aubl., 248. indica Engl., 130. ternatensis femina Rumph., 364. indica Kunth., var. atroviridis Hassk., ternatensis mas Rumph., 364. Clypearia alba Rumph., 248, 249. indica Kunth., var. pallida Hassk., 130. maritima Rumph., 250. vera Hassk., 131. rubra Rumph., 248. Colot e Philippinis Rumph., 148. rubra s. sye II Rumph., 251. Colubrina asiatica (Linn.) Brongn., 341. Cnicus indicus Rumph., 503. Columbia subobovata Hochr., 354. Cnidium diffusum DC., 411.

Columella geniculata (Blume) Merr., 345, | Convolvulus-Continued. turpethum Linn., 442. 346. trifolia (Linn.) Merr., 345. umbellatus Linn., 440. Conyza appendiculata Blume, 498. Columnea chinensis Osbeck, 47. appendiculata Lam., 498. Comacum Adans., 214. Combilium Rumph., 147. balsamifera Linn., 498. rubrum Rumph., 147. cadaverum Rumph., 498. tsjampadaha Rumph., 147. chinensis Linn., 497, 499. cinerea Linn., 497. Combretaceae, 390. Cominsia gigantea (Scheff.) K. Sch., 151, 167. hirsuta Linn., 499. rubra Val., 168. indica minor Rumph., 499. Commelinaceae, 134. mas Rumph., 498. Commelina benghalensis Linn., 134. odorata Rumph., 498. chinensis Osbeck, 47. prolifera Lam., 500. pubigera Linn., 499, 500. communis Linn., 134. Cookia punctata Retz., 311. moluccana Roxb., 135. nudiflora Linn., 47, 134, 185. Copaifera, 254. obtusifolia Vahl, 135. Corchorus capsularis Linn., 353. rumphii Kostel., 134. olitorius Linn., 353. Cordia blancoi Vidal, 448. uniflora Hassk., 135. (Linn.) Merr., 49, Commersonia bartramia campanulata Roxb., 447. \$55, 362. myxa Linn., 447. echinata Forst., 362, 863. orientalis R. Br., 447. platyphylla Andr., 49, 363. rumphii Blume, 447. Compar mangae Rumph., 124. sebestena Linn., 447. Compositae, 497. subcordata Lam., 447. Conchophyllum imbricatum Blume, 437. subpubescens Spanogh., 448. Condondum Rumph., 332. tiliaefolia Warb., 47. malaccense Rumph., 332. Cordyline jacquinii Kunth, 138. Connaraceae, 248. jacquinii Kunth, var. rubens Hassk., 138. Connarus gaudichaudii Planch., 248. rumphii Hook., 137. monocarpus Linn., 254. terminalis Kunth, 137. pentagynus Lam., 299. Corius femina Rumph., 505. Conocephalus amboinensis (Zipp.) Warb., mas Rumph., 505. 199. Cornutia corymbosa Burm. f., 450. Conophallus? sativus Schott, 127. Corona ariadnes lutea Rumph., 438. Convallaria chinensis Osbeck, 47. ariadnes punicea Rumph., 438. fruticosa Linn., 137. Coronilla coccinea Willd., 266. Convolvulaceae, 440. grandiflora Willd., 266. Convolvulus batatas Linn., 443. sesban Willd., 265. bifidus Vahl, 440. Corallaria latifolia Rumph., 262. bilobatus Roxb., 444. parvifolia Rumph., 252. caeruleus Rumph., 445. Cortex acris Rumph., 509. cymosus Desr., 440. caryophylloides albus Rumph., 232. denticulatus Desr., 445. consolidans Rumph., 432. flagelliformis Roxb., 445. filarius Rumph., 243, 380. foetidus Rumph., 489. foetidus Rumph., 243, 380. indicus Burm., 47, 445. igneus Rumph., 244. laevis III Rumph., 220. oninius II. 239. laevis indicus major II rubra Rumph., oninius s. massoy Rumph., 238. papetarius Rumph., 244. laevis indicus major (alba) Rumph., 441. piscatorium Rumph., 187. laevis indicus major III nigra Rumph., saponarius Rumph., 249. 446. Corypha elata Roxb., 110. laevis minor I femina, II mas Rumph., gebanga Blume, 110. 440. licuala Lam., 110. 111. marinus major Rumph., 444. pilearia Lour., 111. marinus minor Rumph., 445. rotundifolia Lam., 111. maritimus Desr., 444. saribus Lour., 111. medium Linn., 444. sylvestris Mart., 110. peltatus Linn., 441. umbraculifera Linn., 111. pennatus Desr., 446. utan Lam., 110. pes-caprae Linn., 444. Costus ananassae Hassk., 47, 165. platypeltis Span., 443. argyrophyllus Ridl., 165. eptans Linn., 444. sericea Blume, 164. riparius Rumph., 445. sericeus Blume, 165.

Costus-Continued. Crusta arborum II alba Rumph., 195. speciosus Blume, 164. arborum III odorata Rumph., 195. speciosus Blume, var. argyrophyllus Ridl., arborum IV minima Rumph., 195. arborum minor Rumph., 194. speciosus Blume, var. glabra K. Sch., ollae III angustifolia Rumph., 478. 164. ollae major Rumph., 467. speciosus Blume var. hirsutus Blume, 164. ollae minor Rumph., 468. speciosus Blume, var. lasiocalyx K. Sch., Cryptanthus chinensis Osbeck, 47. Cryptocarya R. Brown, 238. Cubilia blancoi Blume, 338. Cotyledon laciniata Linn., 243. Covellia hispida Miq., 193. rumphii Blume, 338. Cucumis acutangulus Linn., 491. congesta Miq., 195 anguinus Linn., 494. Cracca Linn., 264. Crassulaceae, 243. conomon Thunb., 493. indicus I vulgaris Rumph., 492. Crassula scutellaria Burm., f., 409. Crataeva marmelos Linn., 293. indicus II boetonensis Rumph., 493. indicus III sinensis Rumph., 492. religiosa Forst., 293. tapia Linn., 293. indicus IV. maximus Rumph., 493. melo Linn., 493. Crategonum amboinicum Rumph., 456. amboinicum I minus Rumph., 479. murinus ruber Rumph., 491. amboinicum II majus Rumph., 479. murinus viridis Rumph., 490. rumphii Hassk., 47, 492. Cratoxylon, 334. Crepis japonica (Linn.) Benth., 503. sativus Linn., 47, 491, 492, 493. trigonus Roxb., 493. Crepitus lupi verus Rumph., 60. Crinum asiaticum Linn., 140. turbinatus Roxb., 493. nervosum L'Hérit., 142. Cucurbitaceae, 490. procerum Carey, 141. Cucurbita cantalupensis Hab., 495. rumphii Merr., 141. citrullus Linn., 492. hispida Thunb., 493. toxicarium Roxb., 140. zeylanicum Linn., 141. indica vulgaris Rumph., 494. Crista pavonis Rumph., 260. lagenaria Linn., 493. Crithmum maritimum Linn., 412. lagenaria Rumph., 493. leucantha Duch., 493. Crithmus indicus I ruber Rumph., 217. indicus II albus Rumph., 217. melopepo Linn., 494. indicus III kaly articulatum Rumph., 211, pepo Linn., 49, 493, 494. Cudrania javanensis Tréc., 189. rumphii Thw., 189. indicus IV portulaca arenosa Rumph., 217. spinosa Hochr., 189. Cudranus amboinensis Miq., 189. verus Rumph., 412. Crotalaria I major Rumph., 263. amboinensis sylvestris Rumph., 189, 217. II minor Rumph., 263. amboinicus Rumph., 189. III agrestis Rumph., 263. bimanus Rumph., 189. chinensis Linn., 263. spinosus O. Kuntze, 189. formosana Mats., 263. Cujavillus Rumph., 391. linifolia Linn. f., 263. Cujavus agrestis Rumph., 391. montana V Rumph., 269. domestica Rumph., 391. montana VIII tsjeme tsjeme Rumph., silvestris Rumph., 391. 287. Culitlawan Rumph., 232. quinquefolia Linn., 263. ex Papuanis et Moluccis insulis Rumph., retusa Linn., 263. 233. stenophylla Vog., 263. Cunoniaceae, 244. Cupania fuscescens Miq., 334. verrucosa Linn., 263. Croton aromaticus Linn., 318. Curanga amara Juss., 467. grandifolius Blanco, 29, 320. fel-terrae (Lour.) Merr., Curania amara R. & S., 467. lacciferum Linn., 321. mauritianum Lam., 322. Curculigo capitulata (Lour.) O. Kuntze, 142. moluccanum Lam., 324. 143. moluccanus Linn., 318. latifolia Dry., 143. multiglandulosus Reinw., 318. orchoides Gaertn., 47, 142. polot Burm. f., 200. recurvata Dryander, 143. tiglium Linn., 317. rumphiana Schultes, 47, 142. tiliifolius Lam., var. aromaticus Lam., 318. sumatrana Roxb., 143. Curcuma aeruginosa Roxb., 164. variegatum var. crispum Muell.-Arg., 326. variegatus Linn., 325. agrestis Rumph., 163. Cruciferae, 240. aromatica Salisb., 163.

Curcuma-Continued. caesia Roxb., 164. domestica minor Rumph., 163. longa Koenig, 163. longa Linn., 47, 163. petiolata Roxb., 163. radice longa Herm., 163. rotunda Linn., 163. viridiflora Roxb., 163. zedoaria (Berg.) Rosc., 164. Cuscuaria marantifolia Schott, 126. rumphii Schott, 126. Cuscuta chinensis Lam., 62. Cussambium Rumph., 337. spinosum Ham., 337. Cussutha Rumph., 239. Cyanotis moluccana (Roxb.) Merr., 135. Cyatheaceae, 63. Cyathea amboinensis Merr., 63. arborea Sm., 63. rumphiana Merr., 63. Cyathula geniculata Lour., 214. prostrata (Linn.) Blume, 214. Cycadaceae, 74. Cycas celebica Miq., 75. circinalis Linn., 74, 75. inermis Lour., 74. pectinata Ham., 47, 75. revoluta Thunb., 75. rumphii Miq., 74. thouarsii R. Br., 74, 75. Cyclea peltata Hook. f. & Th., 220. wallichii Diels, 220. Cyclostegia strobilifera Benth., 458. Cylindrica rubra Lour., 348. Cylizoma Neck., 272. Cymbidium amabile Roxb., 177. furvum Willd., 178. ovatum Willd., 174. scriptum Sw., 177. wallichii Lindl., 177. Cymbopogon citratus Stapf, 88. Cyminosma odorata DC., 399. resinosa Don, 245. Cynanchum mauritianum Lam., 433, 440. odoratissimum Lour., 440. ovalifolium Wight, 435. Cynodon dactylon (Linn.,) Pers., 93. Cynometra cauliflora Linn., 253. ramiflora Linn., 254. ramiflora Linn., var. genuina Prain, 254. ramiflora Linn., var. heterophylla Thw., 254. Cynomorium Rumph., 253. silvestre Rumph., 254. Cynosurus aegyptius Linn., 94. corocanus Linn., 94. indicus Linn., 94. Cyperaceae, 103. Cyperus altior Rumph., 108. dulcis Rumph., 104. floridus II mas Rumph., 104. gramen bufonum Rumph., 108.

humilior Rumph., 108.

inodorus Rumph., 108.

Cyperus-Continued. kyllingioides Vahl, 104. littoreus Rumph., 93. longus Rumph., 104. odoratus Linn., 104. polystachyus Rottb., 106. rotundus Linn., 104, 108. rotundus bulbosus sive legitimus Rumph., 104. cuprus Rumph., 382. Cyrtandra decurrens DeVriese, 470. nemorosa Blume, 470. Curtoceras multiflora Heynh., 439. Cyrtoptera ensiformis Lindl., 172. Cytisus cajan Linn., 282. pinnatus Linn., 271. pseudo-cajan Jacq., 282. Dabanus Rumph., 339. Dactyloctenium aegyptium (Linn.) Richt., 94. aegyptiacum Willd., 95. Daemonorops accedens Blume, 118. barbatus Mart., 117. calapparius Blume, 117. draco (Willd.) Blume, 118. elongatus Blume, 116. longipes Griff., 116. melanochaetes Blume, 118. niger (Willd.) Blume, 118. palembanicus Blume, 118. ruber Blume, 118. rumphii Mart., 115. Dalbergia arborea Willd., 271. heterophylla Willd., 272. parviflora Roxb., 270. parviflora Roxb., 270.

zollingeriana Miq., 270. Dammara alba Lam., 76. alba Rumph., 76. alba femina Rumph., 77. alba Lam., var. celebica Hassk., 77. celebica Rumph., 77. leomelaena Rumph., 376. nigra Hassk., 465. nigra Rumph., 465. rumphii Presl, 76. selanica Rumph., 375. selanica femina Rumph., 375. Damnacanthus indicus Gaertn., 377, 426. Dartus perlarius Lour., 412. Datiscaceae, 378. Daucus anisodorus Blanco, 412. Daun parawas Rumph., 507. Dauncontu Adans., 489.

denticulata Mett., 65. elata Spreng., 64. patens Sw., 65. Dawan batu Rumph., 339. mera Rumph., 339. puti Rumph., 339. Dawas Rumph., 433.

Davallia amboynensis Hook., 65.

Datura alba Nees, 465. Derris-Continued. sinuata Benth., 262, 273. fastuosa Linn., 465. fastuosa Linn., var. alba C. B. Clarke, trifoliata Lour., 272, 465. Desmochaete prostrata R. & S., 214. fastuosa Linn., var. rubra Dunal., 465. Desmodium cumingianum F .- Vill., 47. dependens Blume, 267. hummatu Bernh., 465. metel Linn., 465. gangeticum DC., 267, 501. nigra Hassk., 465. gangeticum (Linn.) DC., 269. ormocarpoides DC., 267, 269. Decadia aluminosa Lour., 421. Decaspermum fruticosum Forst., 392. ormocarpoides Desv., 267. paniculatum Kurz, 48, 392. stipulaceum DC., var. aparine (Hassk.) rubrum Baill., 392. Miq., 269. Deeringia amaranthoides (Lam.) Merr., 211. timoriense DC., 269. triquetrum (Linn.) DC., 268. baccata Moq., 211. celosioides R. Br., 211. umbellatum (Linn.) DC., 268. Deguelia Aubl., 272. viscidum DC., 269. Dehaasia borneensis F.-Vill., 47. zonatum Miq., 268. media Blume, 234. Desmos chinensis Lour., 228. Delima hebecarpa DC., 365. Dialum indum Linn., 244, 257. javanicum Burm. f., 244. Dendrobium acinaciforme Roxb., 173. anosmum Lindl., 175. Dianella nemorosa Lam., 136, atropurpureum J. J. Sm., 175. ensifolia DC., 136. atropurpureum Miq., 176. odorata Blume, 136. bifarium Lindl., 175. Dicalyx aluminosus Blume, 421. bursigerum Lindl., 174. cochinchinensis Lour., 350. calceolum Roxb., 173. javanicus Blume, 420. concinnum Miq., 175. salaccensis Blume, 420. confusum Schltr., 175. Diceros Lour., 466. crumenatum Sw., 173. Dichapetalaceae, 312. ephemerum J. J. Sm., 174, 550. Dichapetalum moluccanum Merr., 312. leucorhodum Schltr., 175. papuanum Engl., 313. macranthum Hook., 175. timoriense Engl., 313. macrophyllum Lindl., 175. Dicksonia sorbifolia Sm., 74. minax Rchb. f., 174. Dicliptera bivalvis Juss., 477. mirbelianum Gaudich., 174, Dicotyledons, 179. moluccense J. J. Sm., 175, 550. Dictyophora phalloidea Desv., 61. papilioniferum J. J. Sm., 173, 174, 176, speciosa Klotzsch., 61. Digera arvensis Forsk., 211. papilioniferum J. J. Sm., var. ephemerum muricata Mart., 211. Digitaria sanguinalis (Linn.) Scop., 90. J. J. Sm., 174. prionochilum Kränzl., 174. Dilivaria ebracteata Pers., 474. pruinosum T. & B., 176. scandens Nees, 474. volubilis Nees, 474. purpureum Roxb., 175, 550. rosenbergii T. & B., 174. Dilleniaceae, 365. Dillenia elliptica Thunb., 367. roxburghii Lindl. 173. rumphianum T. & B., 174. indica Linn., 368. scalpelliforme T. & B., 173. ochreata Teysm. & Binn., 368. scortechinii Hook. f., 175. serrata Thunb., 368. superbum Rchb. f., 175. Dinochloa scandens O. Ktze., 101. tjankorreh Büse, 101. superbum Rchb. f., var. anosmum Rchb. f., 175. Dioclea reflexa Hook. f., 280. viridiroseum Rchb. f., 175. Dioscoreaceae, 145. Dendrocalamus flagellifer Munro, 101. Dioscorea aculeata Linn., 147. Dendrolobium cephalotes Benth., 268. alata Linn., 146. cumingianum Benth., 47. bulbifera Linn., 146. umbellatum W. & A., 268. bulbifera Linn., var. sativa Prain & Bur-Dendrophthoë incarnata Miq., 206. kill, 146. indica Miq., 206. bulbifera Linn., var. suavior Prain & Dentella repens (Linn.) Forst., 478. Burkill, 146. Derris diadelpha Merr., 273. bulbifera Linn., var. vera Prain & Burelliptica (Roxb.) Benth., 273. kill, 146. forsteniana Blume, 254, 272. cliffortiana Lam., 335. heptaphylla Merr., 262. combilium Ham., 147. heptaphylla (Linn.) Merr., 273. daemona Roxb., 148. montana Benth., 273. deltoidea Wall., 335.

Dolichos-Continued.

Dioscorea-Continued. esculenta (Lour.) Burkill, 147. fasciculata Roxb., 147. glabra Koord., 148. hirsuta Roth, 148. hispida Dennst., 148. nummularia Lam., 49, 139, 148. nummularifolia Henschel, 148. oppositifolia Linn., 146. pentaphylla Linn., 147, 148. pentaphylla Linn., var. malaica Prain & Burkill, 147. sativa Linn., 335. spiculata Blume, 146. tiliaefolia Kunth, 147. triphylla Auctt., 148. triphylla Linn., 148. wallichii Hook. f., 147. Diospyros decandra Lour., 420. ebenaster Retz., 419. ebenum Koen., 419. kaki Linn. f., 46, 420. maritima Blume, 419. Diphaca cochinchinensis Lour., 266. Diplazium esculentum Sw., 65. malabaricum Spreng., 65. Diploclinium tuberosum Miq., 379. Dipteracanthus lanceolatus Nees, 472. patulus Nees, 475. ventricosus Nees, 475. Dipterocarpaceae, 375. Dipterocarpus Gaertn., 376. Dischidia collyris Wall., 437. gaudichaudii Decne., 437. imbricata Steud., 437. major (Vahl) Merr., 437. nummularia R. Br., 436. rumphii Miq., 437. Dittelasma rarak Hook. f., 337. Dodonaea angustifolia Blanco, 340. burmanniana DC., 340. dioica Roxb., 340. triquetra Andr., 340. viscosa (Linn.) Jacq., 340. viscosa Jacq., var. vulgaris Benth., forma repanda Radlk., 340. Dolichandrone rheedii Seem., 469. spathacea (Linn. f.) K. Schum., 469. Dolichos albus Lour., 286. altissimus Lour., 286. bulbosus Linn., 285. catjang Linn., 284. dasycarpus Miq., 279. ensiformis Linn., 282. erosus Linn., 285. giganteus Willd., 277. gladiatus Jacq., 281. lablab Linn., 280, 286. lignosus Linn., 286. lineatus Thunb., 281. luteus Sw., 285. obtusifolius Lam., 281. phaseoloides Roxb., 282. pruriens Linn., 277.

rotundifolius Vahl, 281.

sinensis Linn., 284. sinensis Rumph., 284. soja Linn., 274. tetragonolobus Linn., 286. unguiculatus Linn., 279. Donacodes elongata T. & B., 160. incarnata T. & B., 159, 160. rosea Teysm. & Binn., 157. Donax arundastrum Lour., 166. canniformis (Forst.) K. Schum., 47, 166. Dracaena angustifolia Roxb., 137. ensifolia Linn., 136. reflexa Lam., 137. terminalis Rich., 137. Dracontium cordatum Houtt., 128. polyphyllum Linn., 127. Dracontomelum mangiferum Blume, 333. sylvestre Blume, 333. Dracunculus amboinicus II albus Rumph., 128 amboinicus III ruber Rumph., 128. amboinicus niger Rumph., 128. Drymophloeus appendiculatus Becc., 120. jaculatorius Mart., 120. olivaeformis (Giseke) Mart., 120. rumphianus Mart., 122. Drynaria quercifolia J. Sm., 68. sparsisora (Desv.) Moore, 68. Dryobalanops aromatica Gaertn., 376. camphora Colebr., 376. Dryopteris campestris Rumph., 66. ferox O. Kuntze, 64. parasitica O. Kuntze, 73. silvestris II arborea Rumph., 73. silvestris III petraea Rumph., 67. triplex Rumph., 70. triplex arborea Rumph., 64. triplex silvestris I terrestris Rumph., 65. Dulcamara nigra Rumph., 302. Dupinia Scop., 369. Durio Rumph., 361. zibethinus Murr., 361. Dutra alba Rumph., 465. nigra Rumph., 465. rubra Rumph., 465. Dysolobium dolichoides Prain, 279. Dysophylla auricularia (Linn.) Blume, 458. Dysoxylum alliaceum Blume, 308. euphlebium Merr., 308. forsteri C. DC., 309. hamiltonii Hiern, 309. E Ebenaceae, 419. Ebenoxylum verum Lour., 419.

Ebenaceae, 419.
Ebenoxylum verum Lour., 419.
Ebenus Rumph., 419.
alba Rumph., 420.
e Madaguscar Rumph., 419.
molucca Rumph., 419.
Ecdysanthera barbata Miq., 432.
Echinus trisulcus Lour., 481.
Echites hircosa Roxb., 434.
scholaris Linn., 427.
spinosa Burm. f., 425.

Ecliptica Rumph., 500. Eclipta alba (Linn.) Hassk., 500. alba Hassk., var. erecta Hassk., 500. erecta Linn., 500. prostrata Linn., 500. Elaeagnus, 209. Elaeocarpaceae, 348. Elaeocarpus, 505. amboinensis Merr., 350. angustifolius Blume, 352. dolichopetalus Merr., 351. edulis T. & B., 348. excavatus Reinw., 348. fruticosus Roxb., 348. ganitrus Roxb., 352. integrifolius Lam., 352. macrophyllus Blume, 352. moluccanus Scheff., 348. oblongus Gaertn., 352. oppositifolius (DC.) Miq., 348. rumphii Merr., 349. serratus Linn., 351. sphaericus K. Sch., 352. treubii Hochr., 348. Elatostema macrophyllum Brongn., 202. sinuatum Hassk., 202. Eleocharis dulcis (Burm. f.) Trin., 47, 104. plantaginea R. Br., 105. plantaginoidea W. F. Wight, 105. tuberosa Schultes, 105. Elettaria cardamomum Maton, 157. minor Blume, 159. musacea Horan., 159, 160. Eleusine corocana (Linn.) Gaertn., 94. indica (Linn.) Gaertn., 94. Ellobocarpus oleraceus Kaulf., 69 Elodea, 334. Elytranthe amboinensis Merr., 206. Emericia pergularia Roem. & schultes, 434. Emerus sesban O. Kuntze, 265. Emilia sonchifolia (Linn.) DC., 503. Empetrum acetosum I album Rumph., 379. acetosum II rubrum Rumph., 379. acetosum III cordatum Rumph., 380. Endospermum moluccanum (Teysm. & Binn.) Becc., 326. Englehardtia acerifolia Blume, 376. selanica Blume, 375. spicata Blume, 375. Enhalus acoroides (Linn. f.) Rich., 50, 84. koenigii Rich., 84. Entada phaseoloides (Linn.) Merr., 253. rumphii Scheff., 253. scandens Benth., 253. Epicharis, 309. Epidendrum amabile Linn., 177. carinatum Linn., 46. furvum Linn., 178. nervosum Lam., 169. spathulatum Linn., 174. scriptum Linn., 177. tenuifolium Linn., 50. terrestre Linn., 171. tuberosum Linn., 171. Epipremnum pinnatum (Linn.) Engl., 127.

Rumph., 72. secundum Rumph., 73. silvestre III Rumph., 69. Eragrostis amabilis (Linn.) W. & A., 95. amboinensis Trin., 88. elegantula Steud., 46. plumosa Link, 95. tenella R. & S., 95. unioloides Nees, 96. Eranthemum bicolor Schrank, 475. curtatum C. B. Clarke, 475. malaccense C. B. Clarke, 475. pulchellum Hort., 475. racemosum Roxb., 476. Eria moluccana Schltr. & J. J. Sm., 174, 176. Erinus bilabiatus Roxb., 467. Eriocaulon setaceum Linn., 105. Eriochloa ramosa O. Kuntze, 48. Eriodendron anfractuosum DC., 362. Eriophorus javana Rumph., 362. Erithalis polygama Forst., 486. timon Spreng., 486. Erndlia subpersonata Giseke, 47. Eroteum lanigerum Blanco, 47. Erva de Sta. Maria Rumph., 133. Erythrina corallodendron Linn., var. orientalis Linn., 276. fusca Lour., 275. indica Lam., 50, 256. lithosperma Blume, 276. orientalis Murr., 276. ovalifolia Roxb., 275. picta Linn., 276. variegata Linn., 276. variegata Linn., var. orientalis (Linn.) Merr., 276. Erythroxylum monogynum Roxb., 504. Escheweileria palmata Zipp., 407. Esula esculenta Rumph., 328. Eucalyptus binacag Elm., 401. deglupta Blume, 399, 401. moluccana Roxb., 401. multiflora Rich, 401. naudiniana F. Muell., 401. sarassa Blume, 401. versicolor Blume, 401. Eucheuma spinosum Ag., 54. Eugenia acutangula Gaertn., 386. alba Roxb., 397. aquea Burm. f., 393. aromatica Berg., 393. binacag Elm., 401. caryophyllata Thunb., 47, 393. celebica (Blume) Merr., 397. colubcob C. B. Rob., 395. cumini (Linn.) Merr., 394. cymosa Lam., 395. jambolana Lam., 394. jambos Linn., 397. javanica Lam., 393, 395. laeta Ham., 397. longiflora F.-Vill., 48. macrophylla DC., 398.

Equisetum amboinicum II minor Rumph., 72.

squamatum

amboinicum s. arboreum

Eugenia-Continued. malaccensis Linn., 398. melastomifolia (Blume) Merr., 398. mindanaensis C. B. Rob., 393. obtusifolia Roxb., 394. polygama Roxb., 392. purpurea Roxb., 398. racemosa Linn., 385, 393. rumphii Merr., 396. stipularis (Blume) Miq., 397. subglauca Koord. & Valeton, 395. Eulalia japonica Trin., 95. Eulophia R. Brown, 172. Euonymus Linn., 334. Eupatoriophalacron Adans., 500. Euphorbiaceae, 313. Euphorbia capitata Lam., 329. edulis Lour., 329. hirta Linn., 328. ligularia Roxb., 328. neriifolia Linn., 328. pilulifera Linn., 328. splendens Boj., 329. tirucalli Linn., 329. Euphoria cubili Blanco, 338. longana Lam., 338. Eupteron nodosum Miq., 408, 409. Eurycles amboinensis (Linn.) Lindl., 49, 142. coronata Salisb., 142. nervosa Roem., 142. silvestris Salisb., 142. Eusideroxylon zwageri Teysm. & Binn., 234. Euterpe globosa Gaertn., 119. Euxolus polygamus Moq., 213. Evia acida Blume, 332. amara Commers., 332. amara Commers., var. tuberculosa Blume, Evodia, 509. amboinensis Merr., 290, 337. bintoco Blanco, 289. latifolia DC., 289. lunur-ankenda Merr., 291. philippinensis Merr., 289. pteleaefolia Merr., 291. triphylla Auct., 337. triphylla DC., 28, 290. Excoecaria agallocha Linn., 327, 858. virgata Zoll. & Mor., 328. Exidia auricula judae Fries, 60. Exocarpos ceramica A. DC., 208. Exocarpus ceramicus R. Br., 208. epiphyllanthus (Linn.) Merr., 208. phyllanthoides Endl., 208. Faba marina major Rumph., 253. rubra Rumph., 283. Fagaceae, 186.

Fagara avicennae Lam., 289. torva (F. Muell.) Engl., 288. triphylla Lam., 28, 290. Fagelia, 275. Fagraea amboinensis Blume, 424. littoralis Blume, var. amboinensis Blume, 424.

Favolus, 59. Feronia elephantum Correa, 293. limonia (Linn.) Swingle, Fibraura tinctoria Lour., 222. Ficus adenosperma Miq., 196. albinervia Miq., 198. altimeraloo Roxb., 196. altissima Blume, 194. amboinensis Kostel., 192. ampelos Burm. f., 196. auriculata Lour., 192. benghalensis Linn., 192. benjamina Linn., 195. calophylla Blume, 197. citrifolia Willd., 197. confusa Elm., 196. congesta Roxb., 195. conora King, 195. cordifolia Roxb., 195. coronata Reinw., 197. cotoneaefolia Vahl, 194. decaisneana Miq., 196. driveri Elm., 196. exasperata Roxb., 197. forstenii Miq., 197. gelderi Miq., 194. glomerata Roxb., 193. gonia Ham., 197. haematocarpa Blume, 196. hispida Blume, 195. inaequifolia Elm., 196. indica Linn., 194. indica Rumph., 380, leucantatoma Poir,, 193, 198. magnifica Elm., 196. manok Miq., 198. microcarpa Linn. f., 198. moseleyana King, 193. nodosa Teysm. & Binn., 192. obscura Blume, 197. pachyphylla Merr., 197. parasitica Roth, 197. philippinensis Miq., 196. pilosa Reinw., 197. politoria Lam., 197. populnea Willd., 195. pumila Linn., 197. punctata Thunb., 194. pyrifolia Lam., 198. racemifera Roxb., 192, 198. racemosa Linn., 194, 196, 138. recurva Blume, 198. religiosa Linn., 195. ribes Reinw., 195. rubra Vahl, 198. rumphii Blume, 195. septica Burm. f., 193. septica Rumph., 193. septica angustifolia Rumph., 198. septica silvestris Rumph., 198. setibracteata Elm., 196. symphitifolia Lam., 193. trematocarpa Miq., 196, 198. tsjela Ham., 198. variegata Blume, 192, 198. wassa Roxb., 193.

Fieldia lissochiloides Gaudich., 178. Filix amboinica mas Rumph., 64. aquatica I femina Rumph., 71. aquatica II mas Rumph., 73. calamaria Rumph., 69. esculenta Rumph., 65. florida Rumph., 64. lanuginosa Rumph., 74. urens Rumph., 73. Fimbristylis, 108. acuminata Vahl, 105. cumingii F .- Vill., 48. polytrichoides R. Br., 105. setacea Benth., 105, 106. Finlaysonia obovata Wall., 434. Flacourtiaceae, 376. Flacourtia cataphracta Roxb., 377. indica Merr., 48, 426. indica (Burm. f.) Merr., 377. jangomas Steud., 377. ramontchi L'Hérit., 377. sepiaria Roxb., 377. sumatrana Planch., 378. Flagellariaceae, 133. Flagellaria indica Linn., 133. repens Lour., 125. Flamma silvarum Rumph., 487. silvarum peregrina Rumph., 487. Fleurya interrupta (Linn.) Gaudich., 201. Flindersia amboinensis Poir., 48, 291. radulifera Spreng., 48, 291. Flos cardinalis Rumph., 446. coeruleus Rumph., 274. convolutus Rumph., 427. cuspidum Rumph., 417. festalis Rumph., 359. flavus Rumph., 258. globosus Rumph., 215. globosus albus Rumph., 215. horarius Rumph., 359. inpius Rumph., 362. manilhanus Rumph., 429. manorae Rumph., 422. pergulanus Rumph., 434. siamicus Rumph., 440. susannae Rumph., 169. susannae minor Rumph., 169. triplicatus Rumph., 170. Floscopa paniculata Hassk., 135. scandens Lour., 135. Folium acidum majus Rumph., 372. acidum minus Rumph., 373. baggea Rumph., 81. baggea maritimum Rumph., 81. baggea verum Rumph., 82. bracteatum Rumph., 474. buccinatum Rumph., 151. buccinatum album Rumph., 166. buccinatum asperum Rumph., 151, 167. calcosum Rumph., 318. calcosum II Rumph., 318. causonis I album Rumph., 345. causonis II Rumph., 345. causonis III litoreum Rumph., 346. crocodili latifolium Rumph., 268. crocodili parvifolium Rumph., 268.

Folium-Continued. hircinum Rumph., 450, 451. intinctus Rumph., 399. linguae Rumph., 256. linguae litorea alba Rumph., 256. lunatum minus Rumph., 219. mappae Rumph., 29, 319. mensarium album Rumph., 150, 151. mensarium rubrum s. latifolium Rumph., 168. petolatum Rumph., 169. petolatum femina s. vera Rumph., 169. petolatum mas Rumph., 169. politorium arborescens Rumph., 197. politorium flagellare, 197. politorium vulgare fruticosum Rumph., 196. polypi mas et femina Rumph., 407. principissae angustifolium Rumph., 484. principissae latifolium Rumph., 484. tinctorium Rumph., 476. urens angustifolium Rumph., 200. urens latifolium Rumph., 200. urens rubrum Rumph., 200. Fomes amboinensis Fries, 58. Fortunella japonica (Thunb.) Swingle, 294. Fragarius niger Rumph., 403. ruber Rumph., 403. ruber grandifolius Rumph., 404. Freycinetia funicularis (Savigny) Merr., 83. graminea Blume, 83. strobilacea Blume, 83. Fructus bobae Rumph., 335, musculiformis Rumph., 425. regis Rumph., 363. Frumentum indicum s. turcicum s. saracenicum Rumph., 84. Frutex aquosus femina Rumph., 346. aquosus mas Rumph., 347. carbonarius asper Rumph., 508. carbonarius I albus Rumph., 508. carbonarius latifolius Rumph., 508. carbonarius II ruber Rumph., 508. ceramicus Rumph., 449. cerasiformis Rumph., 508. excoecans Rumph., 327. globulorum femina Rumph., 261. globulorum majorum Rumph., 260. lintearius Rumph., 188. muraenarum femina Rumph., 405. Fucus bracteatus Ag., 56. edulis Gmel., 54. granulatus Linn., 55. natans Linn., 55. vesiculosus Linn., 56. Fulha alacra Rumph., 177. Fungi, 56. Fungus arboreus I. Rumph., 59. arboreus II (albus) Rumph., 59. arboreus II (ruber) Rumph., 59. arboreus III Rumph., 59. arborum tuberosus Rumph., 61. elatus cochlearis Rumph., 58. elatus digitatus Rumph., 58. elatus petasoides Rumph., 58,

Fungus-Continued. elatus primus Rumph., 58. igneus Rumph., 60. Funis butonicus major Rumph., 508. butonicus minor Rumph., 312. convolutus Rumph., 199, 278. cratium Rumph., 434. cratium litorea Rumph., 434. crepitans I major Rumph., 343. crepitans II minor Rumph., 344. crepitans III trifolia Rumph., 345. crepitans IV Rumph., 344. dentarius Rumph., 225. felleus Rumph., 220, 343. gnemoniformis Rumph., 78. muraenarum Rumph., 203. muraenarum III Rumph., 405, muraenarum latifolia Rumph., 199. muraenarum mas Rumph., 404. musarius angustifolius Rumph., 225. musarius latifolius Rumph., 225. papius latifolius Rumph., 440. papius parvifolius Rumph., 433. papius rugosior Rumph., 433. pinguis Rumph., 509. pulassarius Rumph., 426. quadrangularis Rumph., 343. quadrifidus Rumph., 453. toaccae Rumph., 424. uncatus angustifolius Rumph., 480. uncatus lanosus Rumph., 480. uncatus latifolius Rumph., 480. urens aspera Rumph., 365. urens glabra Rumph., 366. viminalis Rumph., 342.

G

Furcraea cantala Haworth, 144.

Gabertia scripta Gaudich., 177. Gahnia aspera Spreng., 106. javanica Z. & M., 106. rawacensis (Kunth) Steud., 106. tristis Nees, 106. Gajanus Rumph., 273. edulis O. Kuntz, 273. Gajatus luteus Rumph., 265. niger Rumph., 265. Galanga major Rumph., 153. malaccensis Rumph., 155. minor Rumph., 153. Galedupa elliptica Roxb., 273. indica Lam., 254, 271. pinnata Taub., 271. Galeola, 57. Gallinaria acutifolia Rumph., 258. rotundifolia Rumph., 257. Gandasulium Rumph., 161. Gandola I alba Rumph., 218. II rubra Rumph., 218. Ganga agrestis Rumph., 353. sativa Rumph., 353. Ganitrum oblongum Rumph., 348, 352. Ganitrus Rumph., 348, 350.

sphaerica Gaertn., 351.

Ganoderma amboinense Pat., 58. cochlear Merr., 58. rugosum Bres., 58. Garcinia amboinensis Spreng., 372. celebica Linn., 373. ceramica Boerl., 373. cambogia (Gaertn.) Desr., 373. cochinchinensis Choisy, 372. cornea Murr., 374. dulcis (Roxb.) Kurz, 372, 374. latissima Miq., 374. mangostana Linn., 374. morella Desr., 373. porrecta Wall., var. schizogyna Boerl., picrorhiza Miq., 373, 374. picrorhiza Miq., var. limonorhiza Boerl., rumphii Pierre, 373. Gardenia augusta (Linn.) Merr., 50, 485. florida Linn., 50, 485. frondosa Lam., 485. jasminoides Ellis, 485. Garuga abilo (Blanco) Merr., 305. mollis Turcz., 305. Gastonia saururoides Roxb., 406. Gastrochilus panduratum Ridl., 162. Gelala alba Rumph., 276. aquatica Rumph., 275. litorea Rumph., 276. Gelidium amansii Kutz., 54. Gelpkea stipularis Blume, 379. Gembanga rotundifolia Blume, 110. Gendarussa Rumph., 478. Gendarussa femina Rumph., 477. femina II Rumph., 478. vulgaris Nees, 478. Geniosporum prostratum Benth., 458. Gentianaceae, 424. Gesneriaceae, 470. Gigalobium Boehm., 253. Gigantochloa aspera (Schultes) Kurz, 101. atter Kurz, 101. verticillata Munro, 99, 101. Givotia rottleriformis Griff., 319. Glabraria tersa Linn., 235, 236. Globba acris Rumph., 158. crispa Rumph., 157. crispa I viridis Rumph., 160. crispa II rubra Rumph., 157. hatuana Rumph., 159. lawassi Malacca Rumph., 156. longa minor Rumph., 159. longa s. vulgaris Rumph., 159. marantina Linn., 152, 162. nutans Linn., 154, 155. sekala Rumph., 161. silvestris minor Rumph., 153, 154. silvestris major Rumph., 154. silvestris pada kanka Rumph., 156. silvestris subterranea Rumph., 160 silvestris sulica Rumph., 159. uviformis Linn., 156. uviformis Rumph., 156. Gladiolus odoratus indicus Rumph., 136.

Glans terrestris costensis Rumph., 459. Gossypium-Continued. lapideum Tussac, Gleicheniaceae, 69. latifolium Rumph., 360. Gleichenia dichotoma Hook, var. alternans Mett., 69. majus Rumph., 361. hermannii R. Br., 69. minus Rumph., 361. linearis (Burm. f.) Clarke, 69. nanking Meyen, 361. Glochidion, 315. nanking Meyen var. nadam Watt., 361. Gluta benghas Linn., 331. nigrum Ham., 361. Glycine abrus Linn., 274. purpurascens Poir., 361. hispida Maxim., 274, 283. vitifolium Lam., 360. javanica Linn., 275. Govantesia malulucban Llanos, 48. max (Linn.) Merr., 274, 283. Gracilaria lichenoides Harv., 54. Gramen aciculatum Rumph., 87. mollis W. & A., 282. soja S. & Z., 274. anatum Rumph., 90. ussuriensis Regel & Maack, 274. arguens Rumph., 89. Glycosmis cochinchinensis Pierre, 47. caninum Rumph., 90. capitatum Rumph., 103. spinosa Dietr., 295. Gmelina asiatica Linn., 454. caricosum Rumph., 85. indica Burm. f., 377. caricosum vulpinum Rumph., 92. villosa Roxb., 895, 454. fumi Rumph., 95. Gnemon domestica femina Rumph., 77. polytrichum Rumph., 105. domestica mas Rumph., 77. repens minus Rumph., 93. funicularis Rumph., 77. roris (litereum) Rumph., 92. silvestris Rumph., 77. supplex Rumph., 90. Gnetaceae, 77. vaccinum Rumph., 94. Gnetum edule Blume, 78. vaccinum femina Rumph., 94. funiculare Blume, 77 vulpinum Rumph., 91. funiculare Brongn., 77. Gramineae, 84. gnemon Linn., 77. Grammatophyllum guilelmi II Kränzl., 177. gnemon Linn., var. lucidum Blume, 77. leopardinum Rchb. f., 177. gnemonoides Brongn., 78. rumphianum Miq., 177. indicum (Lour.) Merr., 77, 78. scriptum (Linn.) Blume, 177, 550. latifolium Blume, 77. speciosum Lindl., 177. ovalifolium Poir., 77. Grammica aphylla Lour., 62. rumphianum Becc., 78. Granatum titoreum I latifolium Rumph., 306, scandens Roxb., 78. litoreum II parvifolium Rumph., 306. ula Brongn., 78. verrucosum Karst., 78. litoreum III latissimum Rumph., 307. Granum moluccanum Rumph., 317. Goddam Rumph., 94. Gomutus rumphii Corr., 119. moschatum Rumph., 358. saccharifer Spreng., 119. moschatum agreste Rumph., 358. Gomphrena globosa Linn., 215. Graptophyllum hortense Nees, 474. sessilis Linn., 215. pictum (Linn.) Griff., 276, 474. Goniothalamus Hook. f. & Th., 228. Graptorchis Thou., 172. Graptorkis Thou., 172. Gonocitrus angulatus Kurz, 295. Gonystylaceae, 353. Gratiola amara Roxb., 467. aromatica Pers., 466. Gonystylus affinis Radlk., 353. bancanus (Miq.) Baill., 353. lucida Willd., 468. borneensis Gilg., 353. veronicaefolia Retz., 467. calophyllus Gilg., 353. Grewia inaequalis Blume, 449. miquelianus T. & B., 353. Grossularia domestica Rumph., 196, 198. pluricornis Radlk., 353. domestica longifolia Rumph., 198. Gonus amarissimus Lour., 299. domestica parvifolia Rumph., 198. Goodeniaceae, 496. silvestris Rumph., 198. Gordonia excelsa Blume, 369. Guarea alliaria Ham., 308. rumphii Merr., 368. Guatteria rumphii Blume, 48, 227. Gossampinus alba Ham., 362. Guettarda speciosa Linn., 486. rumphii Schott, 362. Guiacum abilo Blanco, 305. Gossypium Rumph., 361. Guilandina bonduc Linn., 260. arboreum Linn., 360, 361. bonduc Linn., var. majus DC., 261. brasiliense Macf., 360. bonduc Linn., var. minus DC., 260. daemonis Rumph., 365. bonducella Linn., 260. floribus fusco-rubentibus Rumph., 361. crista Small, 260. herbaceum Linn., 361. glabra Mill., 261. indicum Lam., 361. major Small, 261.

Guilandina-Continued. microphylla DC., 251. moringa Linn., 241. nuga Linn., 251, 261. Gummi susu Rumph., 199. Gumira foetida Hassk., 451. laut Rumph., 450. litorea Rumph., 450. silvestris Rumph., 450. Gutta cambodja Rumph., 373. Guttiferae, 370. Gymnacranthera zippeliana (Miq.) Warb., Boerl., Gymnema syringaefolium (Decne.) 435 tingens W. & A., 436. Gymnospermae, 74. Gynandropsis pentaphylla (Linn.) DC., 241. stellatum Forst., 430. cumingiana Dene., 380.

Gynopogon Forst., 430. Gynura sarmentosa DC., 499. Gyrinopsis brachyantha Merr., 380. Ħ Haasia, 237. borneensis Meisn., 47. media Nees, 234, Habenaria cordata Naves, 48. diphylla Dalz., 48. gigantea Don, 169. rumphii (Brongn.) Lindl., 169, 549. susannae R. Br., 169. Halecus litorea Rumph., 318. rugosa Rumph., 320. terrestris alba Rumph., 321. terrestris vulgaris Rumph., 321. Halicacabus baccifer Rumph., 464. indicus I major Rumph., 461. indicus II minor Rumph., 462. peregrinus Rumph., 336. Halopegia K. Schumann, 167. Hamamelidaceae, 245. Hapaloceras arupa Hassk., 48, 415. leerii Hassk., 416. Haplochilus amboinense J. J. Sm., 169. Harina caryotoides Ham., 120. rumphii Mart., 120. Harpullia, 244. arborea Radlk., 505. arborea (Blanco) Radlk., 340. Hartighsea forsteri Juss., 309. Hasskarlia globosa Walp., 80. Hebenaster Rumph., 419. amalyensis Rumph., 420. Hedera amboinensis DC., 406. nodosa Hassk., 408. umbellifera DC., 406. Hedrayostylus corniculatus Hassk., 323. glaberrimus Hassk., 323. Hedychium chrysoleucum Hook. f., 161.

coronarium Koenig, 161.

lanatum Scheff., 156.

Hedyotis angustifolia Miq., 479. crateogonum Spreng., 479. hispida Retz., 479. tenelliflora Blume, 479. verticillata (Linn.) Lam., 479. Hedysarum adhaerens Poir., 267. gangeticum Linn., 267, 269, 501. triquetrum Linn., 268. umbellatum Linn., 268. viscidum Linn., 269. Helicia serrata (R. Br.) Blume, 205, 245. Heliconia bihai Linn., 150, 168. buccinata Roxb., 150. Heliconiopsis amboinensis Miq., 150. Helicteres isora Linn., 363. ovata Lam., 363. Hellenia, 168. rufa Presl, 46. scabra Blume, 46. Helminthostachys dulcis Kaulf., 71. zeylanica (Linn.) Hook., 71. Helospora Jack, 486. Helvella mitra Linn., 59. Hemigraphis alternata T. And., 471. angustifolia Hallier f., 470. colorata Hallier f., 471. petola Hallier f., 470. reptans K. Schum., var. glaucescens Hallier f., 471. esculenta Retz., 65. Herba admirationis Rumph., 457. crinalium domestica Rumph., 359. crinalium silvestris Rumph., 359. memoriae Rumph., 202. mimosa Rumph., 252. moeroris I alba Rumph., 313. moeroris II rubra Rumph., 313. sentiens Rumph., 252, 288. spiralis I hirsuta Rumph., 164. spiralis II laevis Rumph., 164. supplex femina Rumph., 173. supplex femina s. secunda, 176. supplex minor Rumph., 173, 175. supplex quinta Rumph., 173. supplex major prima Rumph., 173. supplex major secunda Rumph., 176. supplex major tertia Rumph., 176. supplex major quarta Rumph., 175. timoris Rumph., 509. vitilaginum Rumph., 406. viva Rumph., 252. Heritiera littoralis Dryand., 365. minor Roxb., 365. Hernandiaceae, 239. Hernandia ovigera Linn., 239. peltata Meisn., 239. sonora Linn., 326. Herpetica Rumph., 257. alata Raf., 257. Herpestis amara Benth., 468. rugosa Roth., 466. Hesperethusa acidissima Roem., 293. Heterospathe elata Scheff., 122. Hexagonia, 59.

Hibiscus abelmoschus Linn., 358. convolvulaceus Hassk., 48, 359. haenkeanus F .- Vill., 48. mutabilis Linn., 359. populneus Linn., 360. rosa-sinensis Linn., 359. surattensis Linn., 48, 359. tiliaceus Linn., 358. zeylanicus Linn., 365. Himanthalia lorea Lyngb., 54. Hippogrostis amboinica I major Rumph., 87. amboinica II minor Rumph., 91. Hippuris indica Lour., 104. Hirneola auricula judae Berk., 60. Hoelen Rumph., 61. Hoferia Scop., 369. Holcus lanatus Linn., 88. saccharatus Linn., 87. sorghum Linn., 87. Homalanthus populneus (Geisel.) Pax, 327. Homalium aranga Vidal, 48. foetidum Benth., 340, 505. foetidum (Roxb.) Benth., 378. griffithianum Kurz, 378. luzonicum F .- Vill., 48. Homalomena alba Hassk., 128. aromatica Schott, 128. calyptrata Kunth, 129. cordata (Houtt.) Schott, 128. rubescens Kunth, 128. rubra Kunth, 128. Hondbessen Adans., 489. Hopea selanica W. & A., 375. Horsfieldia aruensis Warb., 231. canariformis (Blume) Merr., 230. nesophylla Warb., 231. novo-guineensis Warb., 231. roxburghii Warb., 230. sylvestris (Houtt.) Warb., 230. Hornstedtia elongata K. Schum., 159. imperialis Ridl., 159. minor (Blume) K. Sch., 159. Hoya alba Kostel., 439. ariadna Decne., 438. corona ariadnes Blume, 438. diversifolia Blume, 439. elegans Kostel., 439. latifolia Don, 436. lutea Decne., 438. lutea Kostel., 438. multiflora Blume, 439. rumphii Blume, 438. speciosa Decne., 438. sussuela (Roxb.) Merr., 438. Huttum Adans., 384. Hydnocarpus, 510. Hydnophytum amboinense Becc., 488. formicarium Jack, 488. gaudichaudii Becc., 489. montanum Blume, 488. Hydrocharitaceae, 84. Hydrocotyle asiatica Linn., 411. Hydropiton Gaertn., 466. Hymenophallus daemonum Spreng., 61. indusiatus Vent., 61.

Hyperanthera moringa Vahl, 241.
Hypnea divaricata J. Ag., 56.
Hypcestes cumingiana F.-Vill., 48.
purpurea R. Br., 474.
Hypolytrum latifolium Rich., 106.
macrocephalum Gaudich., 107.
Hyptis capitata Jacq., 49.
Hysteria veratrifolia Reinw., 174.
Hystrix frutex Rumph., 472.

1

Icacinaceae, 335. Ichnocarpus R. Br., 433. acuminatus F.-Vill., 48. macrocarpus F .- Vill., 48. velutinus F.-Vill., 48. Ichthyoctonos litorea Rumph., 328. litorea silvestris latifolia Rumph., 370. montana Rumph., 369. Iguanura, 120. Illecebrum sanguinolentum Linn., 214. sessile Linn., 215. Ilysanthes antipoda (Linn.) Merr., 467. veronicaefolia Urban, 467. Impatiens balsamina Linn., 340. coccinea Sims, 341. Imperata cylindrica Beauv., 85. cylindrica (Linn.) Beauv., var. koenigii (Retz.) Benth., 85. Indicum Rumph., 264. brasilianum Rumph., 264. silvestre Rumph., 264. silvestre e Madagascar Rumph., 264. Indigofera anil Linn., 264. anil Linn., var. orthocarpa DC., 264. linifolia Retz., var. angustissima Miq., 264. suffruticosa Mill., 264. tinctoria Linn., 264. tinctoria Linn., var. brachycarpa DC., 264. tinctoria Linn., var. macrocarpa DC., 264. Inga clypearia Jack, 248. saponaria Willd., 249. Inhame St. Thome Rumph., 146. Inocarpus edulis Forst., 273. Intsia amboinensis DC., 255. bijuga (Colebr.) O. Kuntze, 48, 255. Involucaria palmata Roem., 496. trifoliata Roem., 494. Involucrum Rumph., 143. cusci Rumph., 392. Ipo toxicaria Pers., 192. Ipomoea aquatica Forsk., 444. batatas Poir., 442. batatas (Linn.) Poir., 443. beladamboe R. & S., 445. bifida Roth, 440. campanulata Linn., 443. choisyana W. F. Wight, 445. congesta R. Br., 47, 445. cymosa R. & S., 440. denticulata Choisy, 444. indica Merr., 47. indica (Burm.) Merr., 445. gracilis R. Br., 445.

Ipomoea-Continued. littoralis Blume, 445. mammosa Choisy, 443. nil Roth., 445. peltata Choisy, 441. peltata Choisy, var. nigricans Hassk., 446. pes-caprae (Linn.) Roth, 444. quamoclit Linn., 446. reptans (Linn.) Poir., 444. rugosa Choisy, 445. rumphii Miq., 442, 446. Irina glabra Blume, 339. Ischaemum involutum Forst., 92. timorense Kunth, 87 91. Isora corylifolia Schott & Endl., 363. Itelpou Rumph., 133. Ixora chinensis Lam., 487. coccinea Linn., 487. incarnata Roxb., 487. fulgens Roxb., 487. lanceolata Lam., 487. longiflora Sm., 488. macrothyrsa Teysm. & Binn., 488.

stricta Roxb., 487.

Jacquemontia paniculata Hallier f., 46. Jagera serrata (Roxb.) Radlk., 339. speciosa Blume, 339. Jambolana Rumph., 394. Jambolifera odorata Lour., 399. pedunculata Linn., 394. resinosa Lour., 245. Jambosa alba Blume, 397. aquea DC., 393, 398. aquea Rumph., 393. aquea altera Rumph., 393. bifaria Wight, 399. celebica Blume, 397. ceramica Rumph., 394. domestica Blume, 398. domestica Rumph., 398. domestica calapparia Rumph., 398. domestica rosacea Rumph., 398. domestica II minor Rumph., 398. linearis Korth., 397. litorea Rumph., 395. malaccensis DC., 398. melastomifolia Blume, 398. nigra Rumph., 398. purpurascens DC., 398. rosacea Rumph., 397. silvestris alba Rumph., 397, 400. silvestris ayer utan Rumph., 397. silvestris s. biawas Rumph., 397. silvestris parvifolia Rumph., 395. vulgaris DC., 397. Jamtsja Rumph., 505. Jasminum bifarium Wall., 422. litoreum Rumph., 422, 455.

sambac (Linn.) Ait., 422. Jatropha curcas Linn., 324. manihot Linn., 324. moluccana Linn., 200, 324. Jatus Rumph., 450.

Juglans camirium Lour., 324. catappa Lour., 390. Jussiaea purpurea Linn., 476. angustifolia Lam., 406. erecta Linn., 406. suffruticosa Linn., 406. Justicia bivalvis Linn., 474, 476. ecbolium Linn., 475. gendarussa Burm. f., 478. gendarussa Linn, f., 478. moretiana Burm, f., 472. nasuta Linn., 477. picta Linn., 474. purpurea Linn., 474, 476. roxburghiana R. & S., 477. tinctoria Roxb., 476.

Kaempferia galanga Linn., 161. pandurata Roxb., 162. rotunda Linn., 162. Kaju sarassa Rumph., 401. Kalanchoe laciniata (Linn.) DC., 243. Kaly articulatum Rumph., 211. Kanilia caryophylloides Blume, 388. Karivia javanica Miq., 491. Keratophorus leerii Hassk., 416. Khi Rumph., 420. Kleinhovia hospita Linn., 363. Knema angustifolia Warb., 232. cinerea Warb., 231. glauca Warb., 232. globularia Warb., 232. missionis Warb., 232. tomentella Warb., 232. Korthalsia, 117. Kowackil Rumph., 507. Kraunhia, 275. Kyllinga brevifolia Rottb., 103. monocephala Rottb., 103.

T

Labiatae, 456. Lablab cultratus DC., 287. microcarpus DC., 280. perennans DC., 286. vulgaris Savi, 281, 286. Labrusca molucca Rumph., 342. Lacca herba Rumph., 340. lignum Rumph., 270. lignum e Java Rumph., 270. lignum femina Rumph., 270. lignum ruffum Rumph., 270. Lachryma jobi indica Rumph., 84. Lactaria salubris Rumph., 431. salubris Rafin., 431. Lagansa alba Rumph., 240. rubra Rumph., 241. Lagenaria hispida Ser., 495. leucantha (Duch.) Rusby, 493. vulgaris Ser., 493. Lagerstroemia chinensis Lam., 382. chinensis Linn., 48, 381. indica Linn., 48, 381.

Lagondium litoreum Rumph., 453.

Lepidagathis javanica Blume, 473.

nigrum Rumph., 453. vulgare Rumph., 453. Lagurus paniculatus Linn., 48, 86. Laharus Rumph., 481. femina Rumph., 482. lapideus Rumph., 482. mixta Rumph., 482. Lamprocarya rawacensis Kunth, 106. Lampujum majus domesticum Rumph., 152. minus Rumph., 152. silvestre minus Rumph., 152, 162. Lanius Rumph., 299. Lansium Rumph., 309. domesticum Correa, 48, 309. montanum Rumph., 311. silvestre Roem., 310. silvestre Rumph., 310. Lapathum hortense Rumph., 210. Laportea amplissima (Blume) Miq., 200. crenulata Gaudich., 200. decumana (Roxb.) Wedd., 201. stimulans Miq., 201. Lappago amboinica Rumph., 354, 357. amboinica sylvestris Rumph., 354. laciniata Rumph., 464. Lasianthus Adans., 368. Lau lassi Rumph., 334. Lauraceae, 232. Lauraster amboinensis maxima Rumph., 238. Laurus camphora Linn., 233. culilaban Linn., 232. culitlawan Linn., 232. indica Linn., 234. japanica Rumph., 233. malabathrum Burm. f., 233. soncaurium Ham., 233. Lawsonia alba Lam., 382. falcata Lour., 464. inermis Linn., 382, 477. spinosa Linn., 382. Lecythidaceae, 384. Leea aculeata Blume, 347. aculeata Blume, var. moluccana Mig., 347. aequata Linn., 346. sambucina Willd., 346. serrulata Miq., 347. spinosa Spreng., 347. Legnotis lanceolata Blanco, 48. Leguminosae, 248. Leleba alba Rumph., 98. amahussana Rumph., 98. lineata Rumph., 98. nigra Rumph., 98. prava Rumph., 98. rumphiana Kurz, 98. Lemnaceae, 133. Lemna minor Linn., 133. Lens palustris Rumph., 133. phaseoloides Linn., 253. Lentinus djamor Fries, 57. sajor caju Fries, 56. tuber regium Fries, 57. Leontopetaloides Boehm., 144. Leonurus indicus Linn., 457.

mucronata Nees, 473. parviflora Blume, 473. rumphii Merr., 473. Lepiniopsis ternatensis Valet., 426, 507. philippinensis Elm., 427. Lepironia macrocephala Miq., 107. Lepisanthes Blume, 337. pallens Radlk., 337. Leptospermum amboinense Blume, 402. flavescens Smith, 402. porophyllum Cav., 402. thea Willd., 402. virgatum Forst., 402. Leucas lavandulifolia Sm., 457. linifolia Spreng., 457. zeylanica (Linn.) R. Br., 457. Leucojum capitulatum Lour., 142. Levisticum indicum Rumph., 411. Lichenes, 62. Lichen capillaris Burm. f., 62. rocella Lour., 54. usnea Linn., 62. Licuala arbor Rumph., 110. bissula Miq., 111. pilearia Blume, 111. rumphii Blume, 110, 111. rotundifolia Blume, 111. spinosa Wurmb., 110. Lignum aquatile Rumph., 204. clavorum Rumph., 418. colubrinum timorense Rumph., 423. corneum Rumph., 374. emanum Rumph., 75. equinum Rumph., 469. eurinum Rumph., 417. leve alterum Rumph., 234. leve angustifolium Rumph., 235. leve latifolium Rumph., 235. momentaneum Rumph., 348, 352. moschatum Rumph., 504. murinum majus Rumph., 250. murinum minus Rumph., 250. murinum parvifolium Rumph., 250. muscosum parvifolium Rumph., 369. muscosum s. Caju lapia Rumph., 368. papuanum Rumph., 245. papuanum III Rumph., 208. salis minus Rumph., 506. sappan Rumph., 259. scholare Rumph., 427. tsjidji Rumph., 504. vinosum Rumph., 510. Ligularia lactea Rumph., 328. lactea e Java, 329. minor Rumph., 328. Ligusticum acutilobum S. & Z., 411. ajowan Roxb., 411. striatum Roxb., 411. Liliaceae, 136. Lilium indicum Rumph., 143. Limatodes grata Miq., 171. Limnanthemum indicum (Linn.) Griseb, 219, 424. Limo agrestis Rumph., 297. decumanus Rumph., 296.

Limo-Continued. Lodoicea callipuge Comm., 112. ferus Rumph., 297. maldivica (Gmel.) Pers., 112. taurinus Rumph., 297. seychellarum Labill., 112. tuberosus Rumph., 297. Loganiaceae, 423. Lomaria scandens Willd., 66. unguentarius Rumph., 297. ventricosus Rumph., 298. Lomba Rumph., 184. Limodorum ventricosum Steud., 170. Lonchitis amara Rumph., 73. veratrifolium Willd., 170. amboinica Rumph., 66. Limonellus Rumph., 296. amboinica recta Rumph., 64. angulosus Rumph., 295. amboinica recta I major alba Rumph., 73. aurarius Rumph., 298. amboinica recta I major rubra Rumph., 66. funicularis montanus Rumph., 216, 217. amboinica recta II minor Rumph., 73. litoreus Rumph., 508. amboinica volubilis Rumph., 66. madurensis Rumph., 294. muscosa Rumph., 73. Limonia acidissima Houtt., 296. pilosa Rumph., 73. acidissima Linn., 293, 504. saguaria Rumph., 73. angulosa W. & A., 295. Lontaro simile lignum Rumph., 234. aurantifolia Christm., 296. Lontarus domestica Gaertn., 112. spinosa Spreng., 294. domestica Rumph., 112. Limnophila aromatica (Lam.) Merr., 466. silvestris Rumph., 110. balsamea Benth., 466. silvestris altera s. ihur Rumph., 112. chinensis Merr., 47. silvestris s. cabang Rumph., 110. conferta Benth., 466. silvestris s. yhur e Philippin, Rumph., 110, hirsuta Benth., 47. Loranthaceae, 205. punctata Blume, 466. Loranthus evenius Blume, 207. roxburghii G. Don, 466. indicus Desr., 206. rugosa (Roth) Merr., 466. macrophyllus Korth., 206. Lindsaya, 67. rumphii Merr., 205. Lindernia crustacea (Linn.) F.-Muell., 468. Ludia foetida Roxb., 378. Lingoum album Rumph., 270. Luffa acutangula (Linn.) Roxb., 491. rubrum Rumph., 270. cylindrica (Linn.) Roem., 491. saxatile Rumph., 270. pentandra Roxb., 492. petola Ser., 491. Linkeng Rumph., 338. Liparis amboinensis J. J. Sm., 172. sylvestris Miq., 491. confusa J. J. Sm., var. amboinensis J. J. Luisia confusa Rchb. f., 178, 550. teretifolia Blume, 178. Sm., 172. treubii J. J. Sm., 172. teretifolia Gaudich., 178. Liquidamber altingia Bl., 245. Lussa radja Rumph., 299. Lire kitsjil Rumph., 471. Lycoperdon Tournefort, 60. papua Rumph., 471. glomeratum Lour., 61. Lycopersicum esculentum Mill., 465. Liriodendron liliifera Linn., 224. Livistona bissula Mart., 111. Lycopodiaceae, 71. cochinchinensis Blume, 111. Lycopodioides Boehm., 72. rotundifolia (Lam.) Mart., 111. Lycopodium canaliculatum Linn., 71. Lithospermum amboinicum Rumph., 84. caudatum Desv., 72. cernuum Linn., 71. Litsea ambigua Nees, 236. dichotomum Sw., 72. cassiaefolia Blume, 237. chinensis Lam., 235. fruticulosum Blume, 72. forstenii Boerl., 235. nummularifolium Blume, 72. fulva F.-Vill., 235. phlegmaria Linn., 72. glabraria Pers., 235. phlegmarioides Spring., 72. glutinosa C. B. Rob., 235. planum Desv., 72. luzonica F.-Vill., 235. Lygodium circinnatum (Burm. f.) Sw., 69. rumphii (Blume) F.-Vill., 234. microphyllum R. Br., 70. sebifera Pers., 235. scandens (Linn.) Sw., 70. stickmanii Merr., 235. Lythraceae, 381. tersa Merr., 235. Lythrum pemphis Linn. f., 382. triplinervia Blume, 237. Lobelia frutescens Mill., 496. plumieri Linn., 496. Maba buxifolia (Rottb.) Pers., 419. taccada Gaertn., 496. Lobus litoralis Rumph., 277. ebenus Spreng., 419. machaeroides Rumph., 281. elliptica Forst., 419. quadrangularis Rumph., 286. madagascariensis A. DC., 419. Locandi Adans., 299. Macanea arborea Blanco, 48. 144971----37

Macaranga glabra Pax & Hoffm., 321. Mangifera-Continued. grandifolia Merr., 29, 320. laurina Blume, 331. laxiflora Desr., 506. hispida (Blume) Muell.-Arg., 320. involucrata (Roxb.) Baill., 321. longipes Griff., 331. mappa (Linn.) Muell.-Arg., 29, 319. membranacea Blume, 330. porteana André, 29, 320. minor Blume, 330. monandra Merr., 330. tanarius (Linn.) Muell.-Arg., 320. Maccabuhay Rumph., 179, 221. odorata Griff., 330. Machilus Nees, 234. pinnata Linn. f., 332. I mas Rumph., 236. rumphii Pierre, 331. II femina Rumph., 236. silvestris altera Rumph., 331. taipan Ham., 331. III media Rumph., 234. IV minima Rumph., 234. utana Ham., 48, 330. angustifolia Rumph., 237. Mangium album Rumph., 456. odoratissima Nees, 234. candelarium Rumph., 387. peduncularis Nees, 234. caryophylloides Rumph., 388. Macklottia amboinensis Korth., 402. caryophylloides II, 387. Maclura amboinensis Blume, 189. caryophylloides II parvifolium Rumph., Macodes petola Lindl., 169. 386 caryophylloides III Rumph., 387. Macrolobium amboinense Teysm., 48, 255. caseolare album Rumph., 383. bijugum Colebr., 255. Macropiper reinwardtianum Miq., 182. caseolare rubrum Rumph., 383. Macropteris, 262. celsum Rumph., 388. Macrosolen evenius Miq., 207. digitatum Rumph., 389. macrophyllus Miq., 206. ferreum femina Rumph., 382. Macuerus femina Rumph., 470. ferreum mas Rumph., 382, 414. mas Rumph., 202. floridum Rumph., 414. Madorius Rumph., 435. fruticans I corniculatum Rumph., 413. II albifloris Rumph., 435. fruticans II parvifolium Rumph., 414. minus Rumph., 387, 388. Maesa amboinensis Scheff., 412. montanum Rumph., 251. tetrandra (Roxb.) A. DC., 412. Magnoliaceae, 223. porcellanicum Rumph., 382. Magnolia inodora DC., 224. silvestre Rumph., 506. Mangostana Rumph., 374. pumila Andr., 224. Majana alba et rubra Rumph., 460. cambogia Gaertn., 373. celebica Rumph., 373. aurea Rumph., 460. foetida Rumph., 458. Manihot utilissima Pohl, 324. Malaparius Rumph., 271. Maoutia ambigua Wedd., 204. Mapania macrocephala (Gaudich.) K. Sch., flavus Miq., 272. 107. e Nussanive Rumph., 271. Mappa hispida Blume, 320. Mallotus moluccanus Muell.-Arg., 318. tiliifolius (Blume) Muell.-Arg., 318. moluccana Spreng., 319. Malopoenna Adans., 234. tanarius Blume, 320. Marantaceae, 166. Malum aruanum Rumph., 510. Maranta arundinacea Linn., 166. citrium Rumph., 297. dichotoma Wall., 166. granatum Rumph., 384. indicum Rumph., 341. galanga Linn., 153. Malvaceae, 355. grandis Miq., 166. malaccensis Burm. f., 155. Malvastrum coromandelianum Garcke, 357. tonckat Aubl., 166. tricuspidatum A. Gray, 357. Mamanira Rumph., 449. Marasmius Fries, 57. alba Rumph., 448. Marattiaceae, 71. Marcorella Neck., 341. Mammea asiatica Linn., 384. Marignia acutifolia DC., 302. Mandihocca Rumph., 324. nitida Turcz., 47. Manga domestica Rumph., 330. domestica minor Rumph., 331. Marquatia globosa Hassk., 80. foetida Rumph., 329. Marrubium album amboinense Rumph., 460. album amboinicum Rumph., 459. foetida II Rumph., 330. album semisilvestre Rumph., 460. silvestris Rumph., 330. simiarum Rumph., 331. Marsdenia angustifolia Wight, 436. Mangifera altissima Blanco, 330. syringaefolia Decne., 435. caesia Jack, 330. Martahul Rumph., 307. foetida Lour., 329. Marumia, 508. indica Linn., 330. Massoia aromatica Becc., 238. kemanga Blume, 330. Massoy Rumph., 238.

Mastocarpus klenzeanus Kütz., 56. Matricaria sinensis Rumph., 502. Medinilla crassinervia Blume, 405. crispata (Linn.) Blume, 404. lagunae Vidal, 48. macrocarpa Blume, 405. Meibomia gangetica O. Kuntze, 269. triquetra O. Kuntze, 268. umbellata O. Kuntze, 268. Melaleuca cajuputi Roxb., 402. leucadendra Linn., 48, 402. minor Sm., 402. saligna Blume, 402. thea Wendl., 402. trinervis Ham., 48, 402. virgata Linn. f., 402. viridiflora Blume, 402. viridiflora Blume, var. angustifolia Blume, 402. Melanolepis calcosa Miq., 318. moluccana Pax & K. Hoffm., 318. multiglandulosa (Reinw.) Reichb., 318. Melanthesa cernura Decne., 314. Melastomataceae, 403, 508. Melastoma asperum Linn., 403. crispatum Linn., 404. cyanoides Sm., 403. lanaense Merr., 404. malabathricum Linn., 403. moluccanum Blume, 403. octandrum Linn., 199, 404. polyanthum Blume, 403. septemnerve Lour., 404. Meliaceae, 305. Melia koetjape Burm, f., 308. parasitica Osbeck, 48. Melicope luzonensis Engl., 28. triphylla Merr., 290. Melissa lotoria Rumph., 458. Melo Rumph., 493. Melocanna excelsa Roep., 100. humilis Roep., 102. Melochia indica A. Gray, 48. umbellata Stapf. 48. Melodorum latifolium (Dunal) Hook. f. & Th., 228. Melothria indica Lour., 490. javanica (Miq.) Cogn., 491. marginata Cogn., 491. Menispermaceae, 219. Menispermum carolinum Linn., 220. cocculus Linn., 221. crispum Linn., 220, 343. flavescens Lam., 222. flavum Linn., 222. glaucum Lam., 219. lacunosum Lam., 221. tuberculatum Lam., 221. Mentha arvensis Linn., 458. auricularia Linn., 458. cablin Blanco, 458. crispa Rumph., 458. foetida Burm. f., 458. Menthastrum amboinicum Rumph., 466. Menyanthes indica Linn., 424.

spinosa M. Roem., 295. Merremia caespitosa Hallier f., 444. mammosa Hallier f., 443. nymphaeifolia Hallier f., 441. peltata (Linn.) Merr., 441. umbellata (Linn.) Hallier f., 440. umbellata Hall. f., var. orientalis Hallier f., 441. Mertensia dichotoma Willd., 69. Mespilus sylvestris Burm., 48, 377, 425. Mesua ferrea Linn., 370. Meteorus coccineus Lour., 386. Metrosideros amboinensis Rumph., 255. macassarensis Rumph., 418. molucca femina Rumph., 505. molucca fungosa Rumph., 340, 505. molucca mas Rumph., 378, 505. spuria I mas Rumph., 191. spuria II femina Rumph., 191. vera Roxb., 400. vera latifolia Rumph., 400. vera parvifolia Rumph., 400. Metroxylon elatum Mart., 114. filare Mart., 114. hermaphroditum Hassk., 114. inerme Mart., 114. laeve Mart., 114. longispinum Mart., 113. micracanthum Mart., 113. rumphii Mart., 113. sagu Rottb., 112, 114. sagus Koenig, 112. sagus Rottb., 114. sylvestre Mart., 114. Michelia alba DC., 223. blumei Steud., 223. caerulea DC., 223. champaca Blume, 223. champaca Linn., 223. euonymoides Burm. f., 224. longifolia Blume, 223. montana Blume, 224. parviflora DC., 223. sericea Pers., 224. suaveolens Pers., 223. tsiampacca Linn., 224. Micrococca mercurialis (Linn.) Benth., 317. Microglossa volubilis DC., 500. Milium zonatum Llanos, 48. Millefolium aquaticum Rumph., 68. Millettia sericea W. & A., 273. Milnea montana Jack, 311. Mimosa casta Linn., 252. chinensis Osbeck, 49. concinna Willd., 251. dormiens HBK., 252. entada Linn., 253. humilis HBK., 252. mangium Forst. f., 251. procera Roxb., 250. pudibunda Willd., 252. pudica Linn., 252. rugata Lam., 251. saponaria Lour., 249.

Merope angulata (Willd.) Swingle, 294.

Mimosa-Continued. Mucuna-Continued. kraetkei Warb., 278. scandens Linn., 253. miniata Merr., 278. simplicifolia Linn., var. mangium Poir., novo-guineënsis Scheff., 278. pruriens (Linn.) DC., 49, 277. trapezifolia Roxb., 248. utilis Wall., 280. Mimusops elengi Linn., 417. velutina Hassk., 280. kauki Linn., 418. Mundo Rumph., 372. manilkara Don, 418. Muntingia bartramia Linn., 49, 362. obtusifolia Lam., 418. parvifolia R. Br., 417. Muricia cochinchinensis Lour., 496. Murraya exotica Linn., 292. Mirabilis Rumph., 215. paniculata (Linn.) Jack, 49, 292. dichotoma Linn., 216. scandens Hassk., 49, 292. jalapa Linn., 215. sumatrana Roxb., 292. Mirobalanus embilica Rumph., 314. Musaceae, 149. Miscanthus floridulus Warb., 86. Musa acuminata Colla, 150, japonicus (Thunb.) Anders., 86, 95. alphurica Rumph., 149. sinensis Anders., 85. amboinensis Miq., 150. Mischocarpus fuscescens Blume, 334, 339. bihai Linn., 150. Mischophloeus paniculata (Miq.) Scheff., 121, discolor Horan., 150. 122. vestiaria (Giseke) Merr., 121. domestica Rumph., 149. paradisiaca Linn., 149. Mitragyna parvifolia Korth., 482. paradisiaca Linn., subsp. savientum Momordica charantia Linn., 49, 495. (Linn.) O. Kuntze, 149. cochinchinensis (Lour.) Spreng., 496. rumphiana Kurz, 150. cylindrica Linn., 491. silvestris amboinensis Rumph., 150. indica Linn., 49, 495. silvestris mindanauensis Rumph., 150. luffa Linn., 491. simiarum Mig., 150. monadelpha Roxb., 495. simiarum Rumph., 150. trifolia Linn., 494. textilis Née, 150. trifoliata Linn., 494. textilis Née, var. amboinensis Warb., 150. Monarda chinensis Osbeck, 49. troglodytarum Linn., 149. Monimia. 505. uranoscopos Rumph., 149. Monochoria hastata Presl, 135. Muscus capillaris Rumph., 62. sagittata Kunth, 135. frutiscescens femina Rumph., 72. vaginalis (Burm. f.) Presl, 135. fruticescens mas Rumph., 72. vaginalis Presl, var. plantaginea Solms, frutescens muscagineus Rumph., 62. gelatinus japonnensis Rumph., 54. Monocotyledons, 79. Mussaenda dasyphylla Miq., 484. Monosoma littorata Griff., 306. forsteniana Miq., 484... Moraceae, 188. frondosa Linn., 485. Morella rubra Lour., 190. glabra Vahl, 485. Moretiana Rumph., 472. reinwardtiana Miq., 484. Morfalla Rumph., 505. Mussi Rumph., 412. Morinda angustifolia Roth., 490. Myrica nagai Thunb., 190. bracteata Roxb., 490. Myristicaceae, 229. bracteata Roxb., var. celebica Mig., 490. Myristica aromatica Lam., 229. citrifolia Linn., 490. aruana Blume, 231. latifolia Rumph., 490. canariformis Blume, 230. umbellata Linn., 490. corticosa Hook. f., 232. Moringaceae, 241. fatua Houtt., 230. Moringa domestica Ham., 49, 241. fragrans Houtt., 229. oleifera Lam., 49, 241. globularia Lam., 232. polygona DC., 241. macrophylla Roxb., 230. pterygosperma Gaertn., 241. malabarica Lam., 230. zeylanica Willd., 241. microcarpa Willd., 231. Morunga Rumph., 241. moschata Thunb., 229. femina Rumph., 241. officinalis Gaertn., 230. Morus alba Linn., 188. officinalis Linn., 229. indica Linn., 188. philippensis Lam., 230. indica Rumph., 188. pinnaeformis Miq., 230. paniculata Roxb., 203. radja Miq., 230. Mucuna aterrima (Piper & Tracy) Merr., 279. salicifolia Willd., 230. spadicea Blume, 230. bennettii F.-Muell., 278. speciosa Warb., 230. capitata DC., 279. gigantea (Willd.) DC., 277. sylvestris Houtt., 230.

Myristica-Continued. tingens Blume, 231. tomentosa Thunb., 230. uviformis Lam., 231. zippeliana Miq., 232. Myrmecodia amboinensis Becc., 489. inermis Gaudich., 489. rumphii Becc., 489. tuberosa Jack, 489. Myrsinaceae, 412. Myrtaceae, 391, 400, 508. Myrtus amboinensis Rumph., 402. communis Linn., 402. cumini Linn., 394. leucadendra Linn., 402. malaccensis Spreng., 398. saligna Burm. f., 402. Myxopyrum macrolobum A. W. Hill, 422.

Nagassarium Rumph., 370. Nageia Labill., 75. Nanarium minimum s. oleosum Rumph., 303. Nani Adans., 400. Nanihua Rumph., 315. Nania vera Miq., 400. Nanium calapparium Rumph., 510. Nasturtium indicum (Linn.) DC., 240. Nauclea Auct., 481. Nauclea Linn., 482. elegans Teysm. & Binn., 49, 484. fagifolia Teysm. & Binn., 481. lanosa Poir., 480. longiflora Poir., 480. macrophylla Roxb., 484. mitragyna (Miq.,) Merr., 483. moluccana Miq., 481. orientalis Linn., 482. parvifolia Roxb., 482. purpurascens Korth., 482. purpurea Roxb., 483. subdita Merr., 483. undulata Roxb., 47, 482. Negretia pruriens Blanco, 49, 277. Nelitris Gaertn., 486. alba Blume, 392. jambosella Gaertn., 392. paniculata Lindl., 392. polygama Spreng., 392. rubra Blume, 392. Nelumbium nelumbo (Linn.) Druce, 218. speciosum Willd., 218. Nelumbo javanica Poir., 218. Neolitsea amboinensis Merr., 237. cassiaefolia (Blume) Merr., 237. triplinervia (Blume) Merr., 237. Neonauclea calycina Merr., 482. fagifolia Merr., 481. moluccana (Miq.) Merr., 481. purpurea Merr., 483. Nepenthaceae, 242. Nepenthes distillatoria Linn., 242.

Nepenthes distillatoria Linn., 242. maxima Reinw., 242. mirabilis (Lour.) Merr., 242. phyllamphora Willd., 242. Nepeta indica Linn., 459.

malabarica Linn., 466.

Nephelium longana Cambess., 338.

Neriam pulli Rheede, 343.

Nerium coronarium Jacq., 429.

divaricatum Linn., 429.

indicum Mill., 433.

odorum Soland., 433.

oleander Linn., 433.

Nessatus Rumph., 482.

Neuburgia musculiformis (Lam.) Miq., 425.

tuberculata Blume, 425.

tubiflora Blume, 425.

Nicolaia hemisphaerica Horan., 159.
imperialis Horan., 159.
magnifica K. Schum., 159.
speciosa Horan., 159
Nicotiana tabacum Linn., 466.

Nidus germinans formicarium niger Rumph., 488.

germinans formicarium ruber Rumph., 489.

Nipa fruticans Wurmb, 124. fruticans Thunb., 124. Nothoholcus, 88.

Nothopanax anisum Miq., 289. cochleatum Miq., 409. fruticosum (Linn.) Miq., 410. pinnatum (Lam.) Miq., 409. scutellarium (Burm. f.) Merr., 409. tricochleatum Miq., 49, 409.

Novella Rumph., 358.

cinerea Rumph., 191.
litorea Rumph., 360.
nigra Rumph., 447.
repens Rumph., 358.
rubra Rumph., 358.

Nugae silvarum litoreae et terrestres Rumph., 261.

silvarum minimae Rumph., 251. silvarum silvestris Rumph., 288.

Nummularia lactea major I fusca Rumph.,
438.

lactea major II alba Rumph., 439. lactea major III (albo-purpurea) Rumph., 439.

lactea minor Rumph., 439. lactea minor I minima Rumph., 436. lactea minor II major., Rumph., 437.

Nux juglans moluccana bifida Burm., 319. myristica Rumph., 229.

myristica mas Rumph, 230.

Nyctaginaceae, 215.

Nyctanthes acuminata Burm. f., 429. sambac Linn., 422.

Nymphaeaceae, 218.

Nymphaea indica II ceramica Rumph., 219. indica major Rumph., 218. indica minor I vulgaris Rumph., 219. indica minor II ceramica Rumph., 424.

indica minor II ceramica Rumph., 424. indica minor III buronica Rumph., 219. lotus Linn., 219.

nelumbo Linn., 218. pubescens Willd., 219. stellata Willd., 219.

Nypa Rumph., 124.

0

Oberonia ancevs Lindl., 49. ancipita Naves, 49. Ochrosia borbonica Gmel., 431. elliptica Labill., 431. oppositifolia (Lam.) K. Schum., 431. salubris Blume, 431. Ocimum africanum Lour., 461. basilicum Linn., 460. basilicum Linn., var. pilosum Benth., 460. frutescens Linn., 460. gratissimum Linn., 460. menthoides Linn., 458. minimum Linn., 461. sanctum Linn., 461. scutellaroides Linn., 460. tenuislorum Linn., 461. Octomeles moluccana Teysm. & Binn., 49, 378. moluccana Warb., 378. sumatrana Miq., 49, 378. Oculus astaci Rumph., 344. Oenotheraceae, 406. Olacaceae, 209. Oldenlandia repens Linn., 478. verticillata Linn., 479. Oleaceae, 422. Oleander sinicus Rumph., 433. sinicus II minor, 433. Olus album Rumph., 216. album insulare Rumph., 216. calappoides Rumph., 74. calappoides mas Rumph., 74. calappoides II e Celebes Rumph., 74, 75. caprinum Rumph., 476. catappanicum Rumph., 507. crepitans mas Rumph., 434. crepitans I mas Rumph., 436. crepitans II femina Rumph., 437. crudum majus Rumph., 436. crudum minus Rumph., 435. palustre Rumph., 135. palustre femina Rumph., 135. sanguinis Rumph., 335. scrofinum album Rumph., 497. scrofinum luteum Rumph., 503. scrofinum rubrum Rumph., 497. squillarum Rumph., 215. squillarum II minus Rumph., 215. vagum Rumph., 444. vespertilionis Rumph., 494. Oncus esculentus Lour., 147. Onoclea scandens Sw., 66. Opa metrosideros Lour., 400. Operculina turpethum (Linn.) S. Manso, 442. Ophiocolla altera Rumph., 475, 509. Ophioderma pendula Presl, 70. Ophioglossaceae, 70. Ophioglossum circinnatum Burm. f., 69. cordifolium Roxb., 70. flexuosum Linn., 69. laciniatum Rumph., 71. moluccanum Schlecht., 71. pedunculosum Desv., 70. pendulum Linn., 70. scandens Linn., 70.

Ophioglossum-Continued. simplex Rumph., 70. vulgatum Linn., 70. Ophiorrhiza mungos Linn., 431. Ophioxylon album Gaertn., 431. majus Hassk., 431. serpentinum Linn., 300, 430. trifoliatum Gaertn., 431. Oplismenus burmannii Beauv., 91. compositus (Linn.) Beauv., 91. Opuntia Tourn., 380. Opuntia dillenii Haw., 380. Orchidaceae, 168, 548. Orchis amboinica major radice digitatz Rumph., 172. amboinica major II Rumph., 142. amboinica minor Rumph., 169. amboinica minor altera Rumph., 169. gigantea Sm., 169. lanigera Blanco, 49. susannae Linn., 168. triplicata Willem., 170. Oreocnide major Miq., 204. rubescens (Blume) Miq., 204. silvatica Miq., 204. Ormocarpum cochinchinense Merr., 266. glabrum Teysm. & Binn., 266. orientale (Spreng.) Merr., 266. sennoides DC., 267. Ormosia calavensis Azaola, 262. Orontium cochinchinense Lour., 126. Oryza communissima Lour., 93. glutinosa Lour., 93. glutinosa Rumph., 93. montana Lour., 93. praecox Lour., 93. sativa Linn., 93. vulgaris Rumph., 93. Osmelia philippica F.-Vill., 49. philippinensis Benth., 49. Osmoxylon amboinense Miq., 406. miquelii Boerl., 406. moluccanum Becc., 407. umbelliferum (Lam.) Merr., 406, 505. zippelianum Becc., 407. Osmunda coronaria Koenig, 68. zeylanica Linn., 71. Ossifraga lactea Rumph., 329. Otanthera cyanoides (Sm.) Triana, 403. moluccana Blume, 403. Otonychium, 244. Ourouparia Aubl., 479. Outea bijuga DC., 255. Ova piscium Rumph., 85. Oxalidaceae, 287. Oxalis corniculata Linn., 288. reinwardtii Zucc., 288. repens Thunb., 288. sensitiva Linn., 288. Oxyacantha javana Rumph., 425. Oxycarpus cochinchinensis Lour., 372. Oxys lutea indica Rumph., 288. Oxystelma bifidum Llanos, 50. Ozimum citratum indicum Rumph., 461.

P

Pachyma cocos Fries, 62. hoelen Fries, 61. tuber regium Fries, 57, 61. Pachyrrhizus angulatus Rich., 285. bulbosus Kurz, 285. erosus (Linn.) Urban, 285. Paederia amboinensis Miq., 489. foetida Linn., 489. tomentosa Blume, 489. Pagapate Sonn., 383. Pahudia rhomboidea Prain, 46. Pala radja Rumph., 230. Palacca Rumph., 378. Palala aruana Rumph., 231. quarta Rumph., 230, 232, secunda Rumph., 230. sexta Rumph., 232. tertia Rumph., 231. Palaquium amboinense Burck, 415. Palmae, 109. Palma indica nucifera major s. calappa Rumph., 123. indica vinaria II Rumph., 119. Palmifilix alba Rumph., 63. nigra Rumph., 63. postium Rumph., 64. Palmijuncus acidus Rumph., 117. albus Rumph., 115. albus graminosus Rumph., 115. aracanicus Rumph., 117. calapparius Rumph., 117. draco Rumph., 118. draco e Bantam Rumph., 118. equestris Rumph., 116. equestris s. rottang cawa Rumph., 116. laevis Rumph., 133. niger Rumph., 118. palimbanicus Rumph., 118. verus Rumph., 116. verus angustifolius Rumph., 115. verus latifolius Rumph., 116. viminalis Rumph., 116. viminalis s. ua huay Rumph., 117. Panax anisum DC., 289. cochleatum DC., 409. fruticosum Linn., 410. ginseng C. A. Mey., 410. pinnatum Lam., 409. rumphii Hassk., 49, 409. scutellarioides Reinw., 409. secundum Schultes, 409. Pancratium amboinense Linn., 142. narbonense Linn., 49, 142. zeylanicum Linn., 143. Pandanaceae, 79. Pandanophyllum palustre Hassk., 107. Pandanus amboinensis Warb., 82, 83. bagea Miq., 82. baggea maritimum Rumph., 82. candelabrum Beauv., 80. caricosus Spreng., 107. caricosus Kurz, 107. caricosus Rumph., 107.

ceramicus Kunth, 81.

Pandanus-Continued. ceramicus Kunth, var. sylvestris Kunth, ceramicus Rumph., 81. conoideus Lam., 81. dubius Spreng., 81. erigens Thouars, 82. fascicularis Lam., 80. funicularis Rumph., 83. funicularis Savigny, 83. hasskarlii Merr., 80. humilis Lour., 79. humilis Rumph., 79. kurzii Merr., 107. laevis Kunth, 81. laevis Lour., 81. latifolius Hassk., 80. latifolius Rumph., 80. montanus Bory, 82. montanus Miq., 82. montanus (silvestris I) Rumph., 82. moschatus Miq., 81. moschatus Rumph., 81. odoratissimus Linn., 81. polycephalus Lam., 79. repens Mig., 80. repens Rumph., 80. robinsonii Merr., 79. rumphii Warb., 82. sabotan Blanco, 80. silvestris (terrestris II) Rumph., 82. spurius Mart., 80. spurius Rumph., 79. sylvestris Miq., 82, 83. tectorius Soland., 80, 81, 82. tectorius Soland., var. laevis Warb., 81. tectorius Soland., var. moschatus (Miq.) Merr., 81. terrestris Warb., 82, 83. utilis Borv., 80. verus Rumph., 81. Pandorea Spach., 469. Pangel boaja Rumph., 510. Pangium Rumph., 376. edule Reinw., 376. Panicum bromoides Lam., 91. colonum Linn., 87, 91. compositum Linn., 91. dactylon Linn., 93. flavum Nees, 91, 92. aramineum Rumph., 94. indicum Rumph., 92. indicum s. botton Rumph., 84. italicum Linn., 92. limnaeum Steud., 90. molle Sw., 90. nepalense Spreng., 91. palmaefolium Koenig, 91. patens Burm., f., 91. patens Linn., 91. philippinum F.-Vill., 49. polystachion Linn., 89, 91. prostratum Lam., 90. repens Linn., 49. reptans Linn., 90.

Panicum-Continued. Peristrophe bivalvis (Linn.) Merr., 474, 476. sanguinale Linn., 90. tinctoria Nees, 476. stagninum Retz., 90. tinctoria Nees, var. concolor Hassk., 477. tuberosum Llanos, 49. tinctoria Nees, var. rubrinervis Hassk., vulpinum Linn., 49, 91. 477 Papaja litorea Rumph., 408. Peristylus Blume, 169. mas et femina Rumph., 378. gracilis Blume, 49. Perlarius I Rumph., 203. silvestris Rumph., 408. silvestris minor Rumph., 339. I latifolius Rumph., 204. Papaya vulgaris Lam., 378. II Rumph., 412. Papeda rumphii Hassk., 298. III silvestris Rumph., 413. Parameria barbata (Blume) K. Schum., 432. Perotis latifolia Ait., 85. glandulifera Benth., 432. Perrottetia moluccana (Blume) Loesen., 335, philippinensis Radlk., 432. 507. vulneraria Radlk., 432. Persea peduncularis Nees, 234. Perticaria ferrea latifolia Rumph., 400. Paramignya angulata Kurz, 295. longispina Hook f., 295. ferrea parvifolia Rumph., 400. tertia Rumph., 354. Paratropia cumingiana Presl, 49. longifolia DC., 408. tertia latifolia Rumph., 354. macrostachya Miq., 408. Pes equinus Rumph., 411. nodosa DC., 408. Petasites agrestis Rumph., 455. Parens muscarum Rumph., 421. amboinensis Rumph., 456. Parietaria indica Linn., 202, 479. Petesia nitida Bartl., 50. zeylanica Linn., 202. ternifolia Bartl., 50. Petola anguina Rumph., 494. Parinarium curranii Merr., 247. ellipticum T. & B., 247. bengalensis Rumph., 491. glaberrimum Hassk., 247. silvestris Rumph., 491. laurinum A. Gray, 247. tschina Rumph., 491. macrophyllum T. & B., 247. Petraeovitex multiflora (Sm.) Merr., 453. mindanaense Perk., 247. riedelii Oliver, 453. racemosum Merr., 247. Petrea multiflora Sm., 453. scabrum Hassk., 247. Peziza auricula Lour., 60. Paritium tiliaceum A. St. Hil., 358. Phacelophrynium interruptum K. Schum., 167. Parkeriaceae, 68. robinsonii Val., 151, 166. Parkia speciosa Hassk., 253. Phaeomeria magnifica Lindl., 159. Phaeophyceae, 55. Parkinsonia orientalis Spreng., 266. Parrana miniata Rumph., 278. Phajus amboinensis Blume, 170, 172. rubra Rumph., 280. gratus Blume, 171. rumphii Blume, 171. Parsonsia barbata Blume, 432. Pauw Rumph., 331. zollingeri Rchb., 170. Pavetta amboinica Blume, 488. Phalaenopsis amabilis (Linn.) Blume, 177, indica Linn., 487. 178, 550. longiflora Sm., 488. grandiflora Lindl., 177. stricta Blume, 487. violacea T. & B., 178. Payena leerii (Teysm. & Binn.) Kurz, 48, 415, Phallus daemonum Fries, 61. 416. daemonum Rumph., 61. Pedaliaceae, 469. impudicus Linn., 61. Pedicellaria Schrank, 241. Phanera coccinea Lour., 256. lingua Miq., 256. Pellionia sinuata (Blume) Boerl., 202. Peltophorum, 255. Pharmacum limonicum Rumph., 375. Pemphis acidula Forst., 382, 414. magnum marinum Rumph., 185. magnum parvifolium Rumph., 185. Pentapetes phoenicea Linn., 362. Peperidia subpeltata Kostel., 185. magnum vulgare Rumph., 183. Peperomia subpeltata Dietr., 185. papetarium Rumph., 405. Pepo indicus Burm., 49, 494. sagueri legitimum Rumph., 374, indicus Rumph., 494. Phaseolus adhaerens Rumph., 269. Peponaster major Rumph., 210. antillanus Urban, 285. aureus Roxb., 282, 283. minor Rumph., 209. Pergularia angustifolia Dietr., 436. balicus Rumph., 282. glabra Linn., 434. calcaratus Roxb., 283. cylindraceus Rumph., 283. odoratissima Sm., 440. Pericampylus glaucus (Lam.) Merr., 219. cylindricus Linn., 49, 284. incanus Miers, 219. marinus Burm., 285. Periploca mauritiana Poir., 440. maritimus Rumph., 285. mauritianum Poir., 433. max Linn., 274, 283.

	L District Continued
Phaseolus—Continued.	Pimela—Continued. decumana Blume, 300.
minimus Rumph., 282, 285. minimus silvestris Rumph., 282.	glabra Blume, 301.
minor Rumph., 284.	hirsuta Blume, 302.
montanus Rumph., 267.	legitima Blume, 300.
montanus alter Rumph., 265.	nigra Lour., 303, 304.
montanus I Rumph., 264.	oleosa Lour., 303.
montanus III Rumph., 263.	paucijuga Blume, 305.
montanus IV Rumph., 263.	Pimelandra disticha FVill., 49.
montanus VI, VII Rumph., 268.	Pimeleodendron amboinicum Hassk., 327.
montanus VIII Rumph., 269.	Pina hui huitzli Rumph., 252.
mungo Auctt., 283.	Pinalia BuchHam., 176.
mungo Linn., 283.	Pinanga Rumph., 123.
pilosus Klein, 280.	alba Rumph., 123.
radiatus Auctt., 283.	calapparia Rumph., 121, 123.
radiatus Linn., 275.	globulifera Lam., 122.
scriptus Rumph., 283.	kuhlii Blume, 122.
sublobatus Roxb., 283.	nigra Rumph., 123.
unguiculatus Auctt., 284. vulgaris Linn., 283.	punicea (Blume) Merr., 122.
Phlomis zeylanica Linn., 457.	silvestris e Buro Rumph., 121. silvestris glandiformis II Rumph., 122
Phoberos chinensis Lour., 426.	123.
Phoebe, 234.	silvestris globosa Rumph., 119.
Phoenix amboinica montana Rumph., 88.	silvestris oryzaeformis Rumph., 122.
Pholidocarpus ihur (Giseke) Blume, 49, 112.	silvestris saxatilis Rumph., 121.
rumphii Meisn., 49, 112.	ternatensis Scheff., 122.
Phragmites karka Trin., 95.	Pinaceae, 76.
vulgaris (Lam.) Trin., 95.	Pinus abies Lour., 76.
Phrynium capitatum Willd., 143.	dammara Lamb., 76.
dichotomum Roxb., 166.	Piperaceae, 180.
giganteum Scheff., 167.	Piper album Vahl., 182, 185.
Phyllamphora mirabilis Lour., 242.	album et nigrum Rumph., 184.
Phyllanthus acidissimus MuellArg., 314.	amalago Linn., 183.
acidus Skeels, 314.	amboinense (Miq.) C. DC., 182.
ceramicus Pers., 208.	arborescens Roxb., 180.
cernuus Poir., 314.	arcuatum Blume, 185.
cheramela Roxb., 314.	argyrophyllum Miq., 185.
cicca MuellArg., 314.	betle Linn., 182. betle I alba Rumph., 182.
distichus MuellArg., 314. emblica Linn., 314.	betle II cambing Rumph., 182.
epiphyllanthus Linn., 208.	betle III fragrans Rumph., 182.
niruri Linn., 313.	betle Linn., var. siriboa (Linn.) C. DC.
urinaria Linn., 313.	182.
Phyllaurea Lour., 325.	cubeba Roxb., 181.
Phyllitis amboinica I arborea Rumph., 65.	caducibracteum C. DC., 183.
amboinica II terrestris Rumph., 65.	caninum Rumph., 181.
amboinica III Rumph., 66.	caninum Blume, var. glabribracteum C
Phyllodes placentaria Lour., 143.	DC., 181.
Phyllorchis Thou., 177.	chaba Hunter, 183.
Phyllorkis Thou., 177.	decumanum Linn., 180, 181.
Physalis alkekengi Linn., 462.	diffusum Vahl, 185.
angulata Linn., 461.	forstenii C. DC., 180, 181.
indica Lam., 462.	longum Rumph., 183.
minima Linn., 462.	longum e Philippinis Rumph., 183.
pubescens Linn., 462.	longum Linn., 182.
Phytolacca ? javanica Osbeck, 49.	majusculum Blume, 181.
Picria fel-terrae Lour., 467.	malamiris Linn., 181, 182, 184, 186.
Pigafettia elata (Reinw.) H. Wendl., 114.	methysticum Forst., 181.
filaris Becc., 114. filifera (Giseke) Merr., 114.	miniatum Blume, 180. nigrum Linn., 184.
Pigmentaria Rumph., 376.	officinarum C. DC., 183.
Pilosella amboinica Rumph., 504.	peltatum Linn., 184.
Pimela acutifolia Blume, 302.	plantagineum Lam., 183.
alba Lour., 304.	reinwardtianum Miq., 128.
caryophyllacea Blume, 305.	retrofractum Vahl, 183.

Piper-Continued. Poa-Continued. sarmentosum Roxb., 185. plumosa Retz., 95. siriboa Linn., 182. tenella Linn., 95. sirium C. DC., 184. Podocarpus blumei Endl., 76. latifolia Blume, 75. subpeltatum Willd., 184. sylvestre Lour., 181. neriifolius Don, 75. umbellatum Linn., 185. rumphii Blume, 75. Pipturus argenteus (Forst.) Wedd., 203, 204. Pogostemon cablin (Blanco) Benth., 458. patchouli Hook., 458. incanus Wedd., 203. paniculatus Miq., 203. patchouly Pellet., 458. repandus (Blume) Wedd., 203. suavis Ten., 458. velutinus Wedd., 203. Poikilospermum amboinense Zipp., 199. Pisonia aculeata Linn., 216. Poinciana bijuga Linn., 260. pulcherrima Linn., 260. alba Spanoghe, 216. buxifolia Rottb., 419. Polanisia viscosa (Linn.) DC., 240. cauliflora Scheff., 216. Polianthes tuberosa Linn., 143, 144. grandis R. Br., 216. Polyalthia lateriflora King, 227. limonella Blume, 217. zamboangensis Merr., 227. morindaefolia R. Br., 216. Polygaster sampadarius Fries, 61. sulvestris Teysm, & Binn., 216. Polygonaceae, 210. Pistacia oleosa Lour., 337, 338. Polyphema champeden Lour., 190. Pistacio-vitex Linn., 310. jaca Lour., 190. Pistia minor Blume, 132. Polyphragmon minus Rich., 486. stratiotes Linn., 132. sericeum Desf., 486. Pithecolobium clypearia (Jack) Benth., 248. Polypodiaceae, 64. Pittosporaceae, 243. Polypodium albens Blume, 73. Pittosporum ferrugineum Ait., var. filarium dichotomum Tnunb., 69. DC., 243. dissimile Linn., 67. moluccanum (Lam.), Miq., 243. excavatum Roxb., 67. rumphii Putterl., 243. indicum I pilosum s. majus Rumph., 68. Placus Lour., 498. indicum II minus Rumph., 67. Plagiostachys, 156. lineare Burm. f., 69. Planta anatis Rumph., 243. palustre Burm. f., 66. sentiens hispanorum Rumph., 252. phymatodes Linn., 67. Plantago aquatica Rumph., 132. quercifolium Linn., 68. aquatica II minor Rumph., 132. simplex Burm. f., 66. Platanthera gigantea Lindl., 169. sinuosum Wall., 67. horsfieldii Naves, 49. sparsisorum Desv., 68. rumphii Brongn., 169. Polyporus amboinensis Fries, 58. susannae (Linn.) Lindl., 168, 549. cochlear Nees, 58. Platea, 335. lucidus Fries, 59. Platycerium biforme Bl., 68. pisachapanni Nees, 59. coronarium (Koenig) Desv., 68. Polyscias cumingiana F.-Vill., 49. Plecospermum spinosum Tréc., 190. nodosa (Blume) Seem., 408, 409. Plectranthus scutellaroides Roxb., 460. pinnata Forst, 410. Pleione rumphii O. Kuntze, 169. rumphiana Harms, 409. Plectocomia, 117. Polystictus sanguineus Nees, 59. Plectranthus aromaticus Roxb., 459. Pometia pinnata Forst., 337, 339. tuberosus Blume., 459. Pomum amoris Rumph., 465. Pleomele angustifolia (Roxb.) N. E. Br., 137. draconum Rumph., 333. reflexa N. E. Br., 137. draconum silvestre Rumph., 333. Pluchea balsamifera Less., 498. Pongamia corallaria Miq., 262. indica (Linn.) Less., 500. glabra Vent., 254, 271. Plukenetia corniculata Sm., 323. glabra Vent., var. xerocarpa Prain, 272. volubilis Linn., 323. mitis Merr., 271. pinnata (Linn.) Merr., 254, 271. Plumbaginaceae, 414. sinuata Wall., 273. Plumbago coccinea Salisb., 414. indica Linn., 49, 414. uliginosa DC., 272. xerocarpa Hassk., 272. rosea Linn., 49, 414. zeylanica Linn., 414. Pongelion Adans., 299. Plumiera acuminata Ait., 427. Pontederiaceae, 135. acutifolia Poir., 427. Pontederia vaginalis Burm. f., 135. alba Linn., 427. Poppya oblonga Rumph., 496. Poa amabilis Linn., 95. rotunda Rumph., 496. amboinensis Murr., 88. sylvestris Rumph., 494. amboinica Linn., 88. Populus deglubata Reinw., 401.

INDEX

Pseudo-Sandalum amboinense Rumph., 406, 505. Porocarpus Gaertn., 486. Portulacaceae, 217. Portulaca indica Rumph., 217. indica I major sativa Rumph., 217. indica II rubra Rumph., 217. indica III minima Rumph., 218. oleracea Linn., 217. portulacastrum Linn., 217. quadrifida Linn., 217, 218. Potemorphe subpeltata Miq., 185. Pothos barberianus Schott, 125. cuscuaria Aubl., 126. cuscuaria Gmel., 126. gracilis Roxb., 125. latifolius Linn., 125. longifolius Presl, 124. loureirii Hook. & Arn., 125. pinnata Linn., 127. roxburghii DeVriese, 125. rumphii Schott, 124. scandens Linn., 124. tener Schott, 125. Poupartia mangifera Blume, 333. Pouzolzia indica Gaudich., 202. tuberosa Wight, 203. zeylanica (Linn.) Benn., 202. Prageluria N. E. Br., 440. Prasoxylum alliaceum Roem., 309. Premna cordifolia Roxb., 451. corymbosa Rottl. & Willd., 451. cyclophylla Miq., 450. foetida Reinw., 451. gaudichaudii Schauer, 451. integrifolia Linn., 451. integrifolia Auct., 450. laevigata Miq., 450. nitida K. Sch., 451. obtusifolia R. Br., 450. serratifolia Linn., 451. spinosa Roxb., 451. subglabra Merr., 451. tomentosa Willd., 451. Prenanthes japonica Linn., 503. Prionitis hystrix Miq., 472. Procris nivea Gaudich., 202. sinuata Blume, 202. Proteaceae, 205. Protium javanicum Burm., 305. Prunella molucca hortensis angustifolia Rumph., 470. molucca hortensis latifolia Rumph., 471. molucca hortensis III lire petola Rumph., molucca silvestris II rubra Rumph., 471. molucca silvestris III rotunda Rumph., 471. silvestris alba Rumph., 471. Prunum stellatum Rumph., 287. Pseudarthria viscida (Linn.) W. & A. 269. Pseuderanthemum bicolor Radlk., 475. curtatum (C. B. Clarke) Merr., 475, 509. pulchellum (Hort.) Merr., 475. racemosum (Roxb.) Radlk., 476. Pseuderia foliosa Schltr., 176. Pseudochina alba latifolia Rumph., 139. amboinensis Rumph., 139. nigra Rumph., 139.

buroense Rumph., 505. Psidium angustifolium Lam., 391. cujavillus Burm., f., 391. cujavus Linn., 391. decaspermum Linn. f., 392. guajava Linn., 391. pomiferum Linn., 391. pumilum Vahl, 391. pyriferum Linn., 391. Psilotaceae, 73. Psilotum complanatum Sw., 73. triquetrum Sw., 73. Psophocarpus tetragonolobus (Linn.) DC., 286. Psychotria Linn., 488. antherura R. & S., 392. leptothyrsa Miq., 488. rubra Poir., 392. Ptelea arborea Blanco, 340. viscosa Linn., 340. Pteridophyta, 63. Pteris longipes Don, 73. thalictroides Willd., 69. vittata Linn., 66. Pterocarpus blancoi Merr., 271. diadelphus Blanco, 273. flavus Lour., 271. indicus Willd., 270. obtusatus Miq., 271. papuanus F. Muell., 270. santalinus Linn. f., 271. Pterocaulon redolens F-Vill., 49. Pterococcus glaberrimus Hassk., 323. Pteroloma triquetrum Benth., 268. Pterophylla fraxinea D. Don, 244. Pterostigma capitatum Benth., 467. Punicaceae, 384. Punica granatum Linn., 384. Ptychosperma appendiculata Blume, 120. calapparia Miq., 121. paniculata Miq., 121. punicea Miq., 122. rumphii Blume, 120. saxatilis Blume, 121. vestiaria Miq., 121, 122. Ptychotis ajowan DC., 412. roxburghiana DC., 412. Pueraria phaseoloides (Roxb.) Benth., 282. Pulassarius Rumph., 426. arbor Rumph., 426, 507. Pulassarium spurium Rumph., 430. verum Rumph., 430. Pustula arborum Rumph., 437. Pycnanthemum decurrens Blanco, 49. Pycreus odoratus (Linn.) Urb., 104, 106. polystachyus Beauv., 104.

Quamoclit pennata (Desr.) Bojer, 446. vulgaris Choisy, 446. Quercus molucca Linn., 186. molucca Rumph., 186. Quinaria lansium Lour., 311. Quirivelia Poir., 433.

Quisqualis Rumph., 390.

glabra Burm. f., 391. indica Linn., 390. pubescens Burm. f., 390. Quret Adans., 229. Radermachia incisa Thunb., 190. integra Thunb., 190. Radix chinae Rumph., 140. deiparae Rumph., 454. deiparae spuria Rumph., 395, 454. etter Rumph., 509. mustelae I alba Rumph., 430. mustelae II rubra Rumph., 430. puluronica Rumph., 209. sinica Rumph., 410. toxicaria I major Rumph., 140. toxicaria II terrestris Rumph., 141. vesicatoria Rumph., 414. Ramium majus Rumph., 202. Randia racemosa F.-Vill., 49. Raphiolepis indica Lindl., 400. Ratonia montana F.-Vill., 49. rufescens F.-Vill., 50. Rauwolfia serpentina (Linn.) Hook. f., 430. Ramirea maritima Aubl., 104. Renanthera moluccana Blume, 179, 550. Renealmia exaltata Linn. f., 154, 164. usneoides Linn., 62. Restiaria alba Rumph., 362. cordata Lour., 354, 479. nigra Rumph., 354. Rex amaroris Rumph., 300. Rhabarbarum sinense Rumph., 210. Rhamnaceae, 341. Rhamnus jujuba Linn., 341. nepeca Linn., 209. soporifer Lour., 209. Rhaphidophora lacera Hassk., 127. Rhaphis trivialis Lour., 87. Rheum rhabarbarum Linn., 210. undulatum Linn., 210. Rhinacanthus communis Nees, 477. nasuta (Linn.) Kurz, 477. Rhizophoraceae, 386. Rhizophora aegiceras Gmel., 413. apiculata Blume, 387. candelaria DC., 387. caryophylloides Burm. f., 388. caseolaris Linn., 383. conjugata Linn., 386, 388. conjugata Auct., 386. corniculata Linn., 413. cylindrica Linn., 388, gymnorhiza Linn., 388. longissima Blanco, 50. mangle Linn., 387. mucronata Lam., 50, 387. palun DC., 388. sexangula Lour., 389. tagal Perr., 386. timoriensis DC., 386. Rhodamnia, 508.

Rhodophyceae, 54.

Rhopala serrata R. Br., 205. Rhynchosia, 275. retusa Blume, 49. Rhynchospora aurea Vahl, 108. corumbosa Britt., 108. Ricinus africanus Mill., 324. albus agrestis Rumph., 323. albus domesticus Rumph., 323. americanus Rumph., 324. communis Linn., 50, 323, 324. dicoccus Roxb., 318. lividus Jacq., 324. mappa Linn., 29, 319. mappa Roxb., 320. ruber Miq., 50, 324. ruber Rumph., 323. tanarius Linn., 320. viridis Willd., 324. Riedelia curviflora Oliv., 156. lanata (Scheff.) K. Schum., 156. Robinia grandiflora Linn., 266. mitis Linn., 271. uliginosa Roxb., 272. Robinsoniodendron ambiguum' (Wedd.) Merr., Rollinia mucosa Baill., 229. Rosaceae, 245. Rosmarinus officinalis Linn., 456. verus sinensis Rumph., 456. Rostellularia diffusa Nees, 474. purpurea R. Br., 474. Rottlera multiglandulosa Blume, 318. tiliifolia Blume, 318. Rourea minor (Gaertn.) Merr., 413. santaloides W. & A., 413. Roxburghia gloriosoides Roxb., 135. moluccana Blume, 136. Rubiaceae, 478. Rubus celebicus Blume, 246. fraxinifolius Poir., 246. fraxinifolius Poir., subsp. celebicus (Blume) Focke, 246. moluccanus Linn., 245. moluccus latifolius Rumph., 245. moluccus parvifolius Rumph., 246. parvifolius Linn., 246. triphyllus Thunb., 247. Rudens silvaticus latifolius Rumph., 198. silvaticus parvifolius Rumph., 198. silvaticus rugosus Rumph., 198. silvaticus IV Rumph., 199. Ruellia alternata Burm. f., 471. anagallis Burm. f., 467. antipoda Linn., 467. discolor Nees, 471. repanda Linn., 470. repens Linn., 472. Rumex patientia Linn., 210. Rumphia amboinensis Linn., 47. tiliaefolia Poir., 47. Rutaceae, 288, 509. Saccharum cylindricum Linn., 85. edule Hassk., 85, 86.

Sapium indicum Willd., 328. Saccharum-Continued. virgatum Hook. f., 328. japonicum Thunb., 86. Saponaria Rumph., 337. koenigii Retz., 85. Sapotaceae, 415. officinarum Linn., 86. Sarcanthus secundus Griff., 179. sinense Roxb., 86. subulatus (Blume) Reichb. f., 179. spicatum _inn., 85. Sarcocephalus cordatus Miq., 483. Saccus arboreus major Rumph., 190. mitragyna Miq., 483. arboreus minor Rumph., 190. subditus Korth., 483. Saguaster major Rumph., 118. undulatus Miq., 482. minor Rumph., 120. Sarcochilus centipeda Naves, 50. Saguerus gamuto Houtt., 119. tenuifolius Naves, 50. pinnatus Wurmb, 119. Sarcopodium purpureum Reichb. f., 46. rumphii Roxb., 119. Sargasso s. wier Rumph., 55. saccharifer Blume, 119. Sargassum amboinicum Rumph., 55. Sagus elata Reinw., 114. aquifolium J. Ag., 55. farinifera Lam., 113. bacciferum Ag., 55. filaris Blume, 114. binderi Sonder, 55. filaris Rumph., 114. flavifolium Kütz., 55. filifera Giseke, 114. granuliferum Agardh, 55. genuina Giseke, 112. myriocystum J. Ag., 55. genuina Rumph., 113. pelagicum Rumph., 55. genuina II Rumph., 113. polycystum J. Ag., 55. genuina Giseke, var. longispina Giseke, turbinatum Agardh, 55. 113. Sargile Rumph., 120. genuing Giseke, var. silvestris Giseke, 114. minor II Rumph., 120. inermis Roxb., 113. Saribus Rumph., 111. laevis Blume, 114. rotundifolius Blume, 111. laevis Rumph., 114. Satyria Rumph., 179. longispina Blume, 113. Saurauia elegans F.-Vill., 50. longispina Rumph., 113. rugosa Turez., 50. micracanthus Blume, 113. Sauropus albicans Blume, 315. rumphii Willd., 113. Sautiera tinctorium Span., 477. silvestris Rumph., 114. Scaevola frutescens (Mill.) Krause, 431, 496. spinosus Roxb., 114. koenigii Vahl, 496. Sajor volubilis Rumph., 323. plumieri Vahl, 496. Sajorium corniculatum Dietr., 232. velutina Presl, 496. Salacca edulis Reinw., 114. Scapha elegans Choisy, 50. Salaka edulis Reinw., 114. Schefflera Forst., 408. Salicornia herbacea Linn., 211, 217. Schinus limonia Linn., 293. Salken Adans., 272. Schismatoglottis calyptrata (Roxb.) Zoll. & Salvia plebeia R. Br., 457. Mor., 129. Samadera indica Gaertn., 299. longipes Miq., 129. Samama Rumph., 484. Schizaeaceae, 69. Sampacca domestica Rumph., 223. Schizaea dichotoma (Linn.) Smith, 69. domestica IV alba Rumph., 223. Schizomeria ovata D. Don, 245. montana Rumph., 224. serrata Hochr., 205, 244, 507. II parviflora Rumph., 223. Schizostachyum brachycladum Kurz, 102. III coerulea Rumph., 223. hallieri Gamble, 102. silvestris Rumph., 223. lima Merr., 102. Samyda trivalvis Blanco, 50. Schleichera oleosa (Lour.) Merr., 47, 337. Sandalum Rumph., 208. trijuga Willd., 337. radicis Rumph., 208. Schmidelia, 318. rubrum Rumph., 271. grossedentata Turcz., 46. Sandoricum cajim gulur Rumph., 308. timorensis DC., 336. domesticum Rumph., 308. Schoenanthemum alterum Rumph., 89. indicum Cav., 308. amboinicum Rumph., 88. koetjape (Burm. f.) Merr., 308. Schoenorchis juncifolia Blume, 179. silvestre Rumph., 308. Schoenus coloratus Linn., 103. Sanguis mas et femina Rumph., 368. Santalaceae, 208. lithospermus Linn., 90. paniculatus Burm. f., 108. Santalum album Linn., 208. Sapindaceae, 336, 509. secans Linn., 83. Sapindus rarak DC., 337. Schumannianthus dichotomus Gagnep., 166. saponaria Linn., 337. Sciadophyllum longifolium Blume, 408. serratus Roxb., 339. Scilla chinensis Benth., 47.

Scindapsus cannaeformis Engl., 126. Sesban aegyptiacus Poir., 265. cuscuaria Engl., 126. Sesbania aegyptiaca Pers., var. bicolor W. & erectus Presl, 129. A., 265. marantifolius Miq., 126. cannabina (Retz.) Pers., 265. officinalis Schott, 125. coccinea Pers., 266. pertusus Schott, 127. cochinchinensis DC., 265. pinnatus Schott, 127. grandiflora (Linn.) Pers., 266. rumphii Presl, 124. sesban (Linn.) Merr., 265. tener Presl, 125. Sesuvium portulacastrum Linn., 217. Scirpiodendron costatum Kurz, 106. repens Rottl., 217. ghaeri (Gaertn.) Merr., 106. Setaria flava (Nees) Kunth, 49, 91. pandaniforme Zipp., 106. glauca Beauv., 92. sulcatum Miq., 106. italica (Linn.) Beauv., 84, 92. Shorea selanica Blume, 375. Scirpus glomeratus Linn., 103. plantagineus Retz., 105. selanica Blume, var. latifolia Blume, 375. plantaginoides Rottb., 105. Sicchius femina Rumph., 348. polytrichoides Retz., 105. I mas Rumph., 415. Scleria alata Thw., 108. II femina Rumph., 416. approximata Hassk., 108. III Rumph., 416. bancana Miq., 108. Sida abutilon Linn., 355. acuta Burm. f., 356. flagellum Sw., 108. lithosperma Sw., 90, 107. alnifolia Linn., 356. multifoliata Boeckl, 108. asiatica Linn., 356. scrobiculata Nees, 108. carpinifolia Linn. f., 356. sumatrensis Retz., 108. carpinoides DC., 357. tessellata Brongn., 108. cordifolia Linn., 357. tessellata Willd., 90. graveolens Roxb., 356. trialata Poir., 108. hirta Lam., 355. Sclerostylis spinosa Blume, 294. indica Linn., 355. Scolopendria I major Rumph., 70. indica Sweet, var. populifolia (Lam.) II minor Rumph., 67. Mast., 355. Scorodendron pallens Blume, 337. pilosa L'Hérit., 355. Scrophulariaceae, 466. retusa Linn., 356. Scrotum cussi Rumph., 510. scoparia Lour., 356. Scutellaria indica Linn., 468. sonnerationa Cav., 357. prima Rumph., 409. triloba Cav., 357. secunda angustifolia Rumph., 409. Sideroxylon attenuatum A. DC., var. amsecunda latifolia Rumph., 409. boinense Scheff., 417. tertia Rumph., 410. microcarpum Burck., 416. Seaforthia calapparia Mart., 121. Sigalurium rotundum silvestre Rumph., 357. jaculatoria Mart., 120. I rotundum s. vulgare Rumph., 356. olivaeformis Mart., 120. II longifolium Rumph., 356. oryzaeformis Mart., 122. III album Rumph., 357. rumphiana Mart., 122. Simarubaceae, 299. saxatilis Blume, 121. Simbar majangan Rumph., 68. vestiaria Mart., 121. Similis planta peruana Rumph., 252 Secamone lineata Blume, 435. Sinapi indigenum s. amboinicum Rumph., Securidaca volubilis Linn., 342. 240. Selaginellaceae, 72. sinense Rumph., 240. Selaginella d'urvillei A. Br., 72. Sinapis, 240. plana (Desv.) Hieron., 72. juncea Linn., 240. Selaginoides Boehm., 72. Sinapister Rumph., 508. Selbya montana Roem., 311. Sindoc Rumph., 233. Selinum striatum Benth. & Hook. f., 411. Sindora coriacea Prain, 255. Semecarpus cassuvium Roxb., 334. galedupa Prain, 254. forstenii Blume, 334. inermis Merr., 254. Sempervivium indicum majus Rumph., 136. sumatrana Miq., var. javanica Koord. & Senecio amboinicus Rumph., 497. Valeton, 255. Serratula amara Rumph., 468. Siriboa Rumph., 182. amara parvifolia Rumph., 508. Sirifolia Rumph., 186. Seruneum aquatile Rumph., 500. litorea Rumph., 186. Sesamum indicum Linn., 469. indicum album Rumph., 469. Siriifolium Rumph., 182. Sirioides Rumph., 423. indicum nigrum Rumph., 469. orientale Linn., 469. alter Rumph., 422, 424.

Sirium arborescens tertium Lumph., 180. Sonneratiaceae, 383. arborescens tertium alterum Rumph., 182. Sonneratia acida Linn. f., 383. decumanum Rumph., 181. alba Sm., 383. caseolaris (Linn.) Engl., 383. decumanum album Rumph., 182. frigidum rotundifolium Rumph., 185. pagatpat Blanco, 383. Sophora glabra Hassk., 269, 287. murtifolium Linn., 208. terrestre Rumph., 185. heptaphylla Linn., 262, 273. silvestre Rumph., 183. tomentosa Linn., 262. Sisymbrium indicum Linn., 240. Sorghum s. Battari Rumph., 87. Sorindeia madagascariensis Thouars, 332. Sium ninsi Linn., 410. siarum Linn., var. ninsi DC., 410. Soulamea amara Lam., 300. Smilax aspera Linn., 140. Spathoglottis plicata Blume, 171, 172, 549. australis R. Br., 139. Spermacoce articularis Linn. f., 479. discolor F.-Vill., 50. bauhinioides Kunth, 140. china Linn., 189, 140, 148. stricta Linn, f., 479. indica Vitm., 140. tenuior Linn., 479. javensis A. DC., 139. Spermatophyta, 74. glycyphylla Sm., 139. Sphaerococcus gelatinus Ag., 54. leucophylla Blume, 139. Sphaerococcus lichenoides Ag., 54. leucophylla Blume, var. platyphylla Merr., Spilanthes acmella (Linn.) Murr., 501. pseudo-acmella Murr., 501. sarmentis spinulosis Rumph., 140. tinctorius Lour., 501. villandia Ham., 140. Spina pectinata Rumph., 426. zeylanica Linn., 139. spinarum I mas Rumph., 377. Soccus arboreus major Rumph., 190. spinarum II femina Rumph., 377. arboreus' minor Rumph., 190. vaccarum Rumph., 228. granosus Rumph., 190. Spinifex littoreus (Burm, f.) Merr., 92. lanosus Rumph., 190. squarrosus Linn., 93. silvestris Rumph., 191. Spirodela, 133. silvestris celebicus Rumph., 191. Spondias acida Blume, 332. Soffera Rumph., 258. amara Lam., 332. Soja hispida Moench., 274, dulcis Forst., 332. max Piper, 274, 283. dulcis Forst., var. acida Engl., 332. Solanaceae, 461. mangifera Willd., 332. Solanum aethiopicum Lour., 463. pinnata (Linn. f.) Kurz, 332. aethiopicum Lour., var. violaceum Dunal, Sponia amboinensis Decne., 187. pubigera Miq., 448. agreste album Rumph., 463. timorensis Decne., 187. agreste rubrum Rumph., 463. virgata Planch., 187. album Lour., 463. Stachycrater philippinus Turcz., 49. album Lour., var. rumphii Dunal, 463. Stachygynandrium Beauv., 72. esculentum Dunal, 463. Stadmannia sideroxylon DC., 337. indicum Linn., 463. Stagmaria verniciflua Jack., 331. insanum Linn., 463. Stauropsis lissochiloides Benth., 178. lycopersicum Linn., 465. Stemodia capitata Benth., 467. melongena Linn., 462. menthastrum Benth., 466. melongena Linn., var. esculentum Walp., Stemonaceae, 135. 463. Stemona moluccana (Blume) C. H. Wright, nigrum Linn., 464. 136. nigrum Linn., var. rumphii Miq., 464. tuberosa Lour., 135. pressum Dunal, 463. Stemonurus Blume, 335. rumphii Dunal, 464. Stenochlaena palustris (Burm. f.) Bedd., 66. triangulare Lam., 464. Stenosemia aurita Presl, 64. trongum Poir., 463. Stephania forsteri (DC.) A. Gray, 220. trongum Poir., var. rumphii Dunal, 463. Sterculiaceae, 362, verbascifolium Linn., 464. Sterculia balanghas Linn., 364. verbascifolium Linn., var. adulterinum foetida Linn., 364. Ham., 464. treubii Hochr., 364. Solidago chinensis Osbeck, 50. Solori Adans., 272. urceolata Sm., 364. Stercus squillarum Rumph., 510. Solulus arbor Rumph., 266. Stictocardia campanulata Merr., 446. Sonchus amboinicus Rumph., 503. volubilis Rumph., 499. tiliaefolia Hallier f., 446. volubilis javanicus Rumph., 500. Stigmarota jangomas Lour., 377. Stilago bunius Linn., 316. Soncorus Rumph., 161. Songium Rumph., 367. Stillingia populnea Geisel., 327.

Stipa arguens Linn., 89. littorea Burm. f., 92. spinifex Linn., 92. Stixis scandens Lour., 248. Stizolobium aterrimum Piper & Tracy, 279. capitatum O. Kuntze, 279. pruriens Medic., 277. Stoechas pilosa Rumph., 467. Stramonia indica Rumph., 465. indica III dutra rubra Rumph., 465. Stratiotes acoroides Linn., 84. Stravadia alba Pers., 385. Stravadium album DC., 385. rubrum DC., 385. Streptocaulon mauritianum Don, 433, 440. Strobilanthes, 471. Stromanthe tonckat Eichl., 166. Strychnos barbata A. W. Hill, 423. bicirrhosa Lesch., 422. colubrina Linn., 422. ligustrina Blume, 423, muricata Kostel., 423. tieute Lesch., 423. Stylocoryne racemosa Cav., 49. Surenus Rumph., 305. alba Rumph., 306. febrifuga O. Kuntze, 305. rubra Rumph., 306. Sussuela esculenta I mas Rumph., 435. esculenta II femina Rumph., 435. Swietena sureni Blume, 305. Symplocaceae, 420. Symplocos ferruginea Roxb., 420. javanica (Blume) Kurz, 420. syringoides Brand, 421. Syncarpia vertholenii Teysm. & Binn., 400. Syzygium cumini Skeels, 394. jambolanum DC., 394. longiflorum Presl, 48.

Tabacus Rumph., 466. Tabernaemontana alternifolia Linn., 427. bovina Lour., 429. bufalina Lour., 429. capsicoides Merr., 428. citrifolia Linn., 427. coronaria Willd., 429. corymbosa Roxb., 429. dichotoma R. Br., 432. divaricata (Linn.) R. Br., 429. Taccaceae, 144. Tacca dubia Schultes, 144, 145. litorea Rumph., 144, 145. montana Rumph., 145. montana Schultes, 145. palmata Blume, 145. phallifera Rumph., 127, 144, 145. pinnatifida Forst., 127, 144. rumphii Schauer, 145. sativa Rumph., 127, 145. Taccae fungus Rumph., 127, 128, 145. Taetsia fruticosa (Linn.) Merr., 137. terminalis W. F. Wight, 137.

Talauma liliifera Kurz. 224. rumphii Blume, 224, Taliera gembanga Blume, 110. sylvestris Blume, 110. Tamarindus Rumph., 255. altera Rumph., 257. indica Linn., 255. Tanarius major Rumph., 244. major II Rumph., 507. mappa O. Ktze., 319. minor alba Rumph., 320. minor rubra Rumph., 320. Tanghinia lactaria Don, 432. Tanjonus litorea Rumph., 417. Taonabo Adans., 369. Tapeinidium amboynense (Hook.) C, Chr., Tapeinochilus ananassae (Hassk.) K. Shum., 41, 50, 165. pungens Miq., 165. Taxaceae, 75. Taxotrophis ilicifolia Vidal, 188. obtusa Elm., 188. triapiculata Gamble, 188. Tecoma amboinensis Blume, 469. dendrophila Blume, 469. Tectaria crenata Cav., 64. Tectona grandis Linn. f., 450. theka Lour., 450. Telosma odoratissima (Lour.) Coville, 440. Tephrosia purpurea Pers., 264. timoriensis DC., 265. Terebinthina Rumph., 466. Terminalia angustifolia Jacq., 332. catappa Linn., 49, 390. catappa Linn., var. chlorocarpa Hassk., catappa Linn., var. macrocarpa Hassk., fruticosa Goepp., 137. moluccana Lam., 390. vernix Lam., 331. Terminalis alba domestica Rumph., 137. alba silvestris Rumph., 137. angustifolia Rumph., 137. rubra Rumph., 137. rubra silvestris Rumph., 137. Ternstroemia megacarpa Merr., 370. robinsonii Merr., 369. Tetracera assa DC., 367, 509. boerlagei Merr., 366. hebecarpa Boerl., 365. indica (Christm. & Panz.) Merr., 367. moluccana Martelli, 367. sarmentosa Vahl, 50. scandens (Linn.) Merr., 50, 365. Tetradapa javanorum Osbeck, 50, 276. Tetranthera ambigua Blume, 236. angustifolia Wall., 238. forstenii Blume, 235. glabraria Nees, 235. laurifolia Jacq., var. saligna Nees, 236. laurifolia Jacq., var. tersa Blume, 236. monopetala Roxb., 235. rumphii Blume, 234.

Tridesmis, 334

Tetrastigma Planch., 346. Thalia cannaeformis Forst., 166. Thallophyta, 53. Theka Adans., 450. Themeda arguens Hack., 89. ciliata Hack., 89. frondosa (R. Br.) Merr., 89. gigantea (Cav.) Hack., 89. Thespesia macrophylla Blume, 360. populnea (Linn.) Soland., 360. Thoa edulis Willd., 78. Thottea dependens Klotzsch, 181. Thrixspermum centipeda Lour., 50. Thuarea involuta (Forst.) R. Br., 92. sarmentosa Pers., 92. Thylacophora pogonocheilus Ridl., 156. 1 hymelaeaceae, 380. Tiglium officinale Klotz., 317. Tiliaceae, 353. Tillandsia usneoides Linn., 62. Timonius Rumph., 486. jambosella Thw., 392. nitidus F.-Vill., 50. rumphii DC., 486. sericeus (Desf.) K. Sch., 486. ternifolius F .- Vill., 50. Tingulong Rumph., 305. Tinospora crispa Miers, 220. reticulata Miers, 221. rumphii Boerl., 220. thorelii Gagnep., 221. Tittius Rumph., 452. litorea Rumph., 486. Tomex Thunb., 234. Toona sureni (Blume) Merr., 305. Torenia benthamiana Hance, 50. crustacea Cham. & Schlecht., 468. edentula Griff. 468. Toulichiba Adans., 262. Tournefortia argentea Linn. f., 448. foetidissima Linn., 448. Torenia glabra Osbeck, 50. Tragia hirsuta Blume, 366. mercurialis Linn., 317. scandens Linn., 50, 365. volubilis Linn., 366. Trema amboinensis Auct., 187. amboinensis (Willd.) Blume, 187. orientalis (Blume), var. amboinensis Lauterb., 187. timorensis Blume, 187. virgata Blume, 187. virgata Bl., var. scabra (Bl.) Ltb., 187. Tremella auricula Linn., 60. Trevesia moluccana Miq., 407.

Trisanthus cochinchinensis Lour., 411. Triumfetta bartramia Linn., 354 857, 868. indica Lam., 355. rhomboidea Jacq., 354. rotundifolia Lam., 355. Trongum agreste album Rumph., 463. agreste rubrum Rumph., 463, 464. agreste spinosum Rumph., 463. hortense Rumph., 462. hortense album amboinense Rumph., 462. hortense II album Rumph., 463. Trophis aspera Retz., 190. spinosa Blume, 189. Tschintschau javanense Rumph., 457. Tsjinkin Rumph., 381. Tsjiulang Rumph., 309. Tuba baccifera Rumph., 221. flava Rumph., 222. radicum alba Rumph., 273. radicum nigra Rumph., 273. siliquosa Rumph., 272. Tuber regium Rumph., 57, 61. sampadarium Rumph., 61. Tubu tubu Rumph., 165. Tulipa javana Rumph., 141. Turbinaria ornata J. Ag., 55. vulgaris J. Ag., var. conoidea J. Ag., 56. Turia Rumph., 266. minor Rumph., 266. Tylophora R. Br., 436. bifida F .- Vill., 50. Typhonium divaricatum (Linn.) Decne., var. robustum Kunth, 132. javanicum Miq., 132. Ubium anguinum Rumph., 146, 147. anniversarium Rumph., 146. digitatum Rumph., 146. draconum Rumph., 146. nummularium Rumph., 139. nummularium floriferum Rumph., 149. nummularium frugiferum Rumph., 148, 149. ovale Rumph., 146. polypoides Rumph., 136. polypoides I album Rumph., 135. polypoides II nigrum Rumph., 136. pomiferum Rumph., 146. quinquefolium Rumph., 147. silvestre Rumph., 148. vulgare Rumph., 146. Ulassium femina Rumph., 481. lapideum Rumph., 481.

mas Rumph., 481.

Uncaria acida Roxb., 481.

ferrea DC., 480.

Umbraculum corniculatum O. Kuntze, 413.

maris amboinense Rumph., 413.

maris ceramense Rumph., 413.

cordata (Lour.) Merr., 479.

Ulet Rumph., 188.

Umbelliferae, 411.

Ulmaceae, 186.

Trichospermum lanigerum Merr., 47. trivalve Merr., 47. 144971——38

zippeliana Miq., 407.

Trichomanes elatum Forst., 66.

tenuifolia Burm. f., 66.

bracteata Voigt, 496.

cucumerina Linn., 496. trifolia (Linn.) Merr., 494.

trifoliata Blume, 494.

Trichosanthes anguina Linn., 494.

Trichilia nervosa Vahl, 308.

Uncaria-Continued. Vallisneria sphaerocarpa Blanco, 50. florida Vid., 480. Vanda batemannii Lindl., 178. gambir Roxb., 480. celebica Rolfe, 178, lanosa Wall., 480. crassiloba T. & B., 178. longiflora (Poir.) Merr., 480. furva Lindl., 178. pedicellata Roxb., 479. lissochiloides Lindl., 178. pteropoda Miq., 480. scripta Spreng., 177. setiloba Benth., 480. Vandellia crustacea Benth., 468. Unjala bifida Reinw., 407. Vandopsis lissochiloides (Gaudich.) Pfitz., 178. Unona discolor Dunal, 228. Varinga funicularis Rumph., 198. latifolia Dunal, 228. latifolia Rumph., 194. ligularis Dunal, 226. nounouck Rumph., 198. musaria Dunal, 225. parvifolia Rumph., 195. narum Dunal, 225. parvifolia alta Rumph., 196. odorata Dunal, 226. parvifolia humilis Rumph., 196. selanica DC., 375. pelal Rumph., 197. tripetala DC., 228. repens Rumph., 197. tripetaloidea Dunal, 228. supa Rumph., 197. Upas alterum Rumph., 423. Varneria augusta Linn., 50, 485. Urceola, 434. Ventilago cernua Tul., 342. Urena heterophylla Lam., 358. maderaspatana Gaertn., 342. Verbenaceae, 448. lappago Sm., 358. lobata Linn., 354, 357. Verbena rubra Rumph., 214. sinuata Linn., 358. Verbesina acmella Linn., 501. Urera amplissima Blume, 200. alba Linn., 500. Urostigma neglectum Miq., 196. aquatica Burm., 50, 500. pilosum Miq., 197. biflora Linn., 500. Urticaceae, 200. lavenia Linn., 497. Urtica aestuans Linn., 202. Vernicia montana Lour., 332. argentea Forst., 203. Vernonia cinerea (Linn.) Less., 497, 500, leptophylla DC., 497. decumana Roxb., 201. linifolia Blume, 497. decumana Rumph., 201. decumana alba, 201. Vertifolia alba Rumph., 335, 507. decumana rubra, 201. rubra Rumph., 335, 507. Vicoa indica DC., 499. decumana III vulgaris Rumph., 201. interrupta Linn., 201. Vidara littorea Rumph., 209. Vidoricum domesticum Rumph., 375. involucrata Roxb., 321. mortua Rumph., 317. silvestre Rumph., 312. nivea Linn., 202. silvestre II, var. Rumph., 418. silvestre II Rumph., 418. repanda Blume, 203. silvestre IV Rumph., 418. rubescens Blume, 204. rumphii Kostel., 201. III Rumph., 418. V Rumph., 418. tuberosa Roxb., 203. VI Rumph., 418. Urticastrum Fabr., 200. Usnea Linn., 62. Vigna catjang Linn., var. alba Hassk., 285. Uvaria, 510. catjang Linn., var. ruber Hassk., 285. argentea Blume, 225. cylindrica (Linn.) Merr., 49, 284. grandiflora Roxb., 225. lutea A. Gray, 285. latifolia Blume, 228. marina (Burm.) Merr., 285. ligularis Lam., 226. sinensis (Linn.) Endl., 284. littoralis Blume, 225. Villarsia indica Vent., 425. macrophylla Roxb., 225. Villebrunnea rubescens Blume, 204. Viscum amboinicum album Rumph., 205. moluccana Kostel., 225. musaria (Dunal) DC., 225. amboinicum rubrum Rumph., 206. odorata Lam., 226. Vitaceae, 342. ovalifolia Blume, 225. Vitex altissima Linn. f., 310. pilosa Roxb., 225. cofassus Reinw., 452. littoralis Done., 452. rosenbergiana Scheff., 225. moluccana Blume, 452. tripetala Lam., 228. monophylla K. Sch., 452. tripetala Roxb., 417. zeylanica Linn., 225, 226. negundo Linn., 453. paniculata Lam., 453. parviflora Juss., 452. pinnata Linn., 292, 310. Vallaris glabra (Linn.) O. Kuntze, 434. timoriensis Walp., 452. ovalis Miq., 434. trifolia Linn., 453. pergulana Burm. f., 434.

Vitis alba Rumph., 343.

alba indica Rumph., 495.

diffusa Miq., 344.

geniculata Miq., var. grosseserrata Miq.,

346.

indica Linn., 342.

labrusca Linn., 343.

metziana Miq., 344.

modesta Miq., 344.

quadrangularis Wall., 343.

quadricornuta Miq., 344.

repens W. & A., 343.

trifolia Linn., 342, 345.

vitiginea Linn., 343.

vitiginea Linn., 343.

Vittaria, 65.

Volkameria commersonii Poir., 455.

inermis Linn., 456.

nereifolia Roxb., 455.

petasites Lour., 455.

W

Wanga Rumph., 114.

Wedelia biflora (Linn.) DC., 50, 500.

calendulacea Less., 50.

scaberrima DC., 501.

Weinmannia fraxinea Sm., 244.

Windmannia P. Br., 244.

Wollastonia strigulosa DC., 501.

Wrightia pubescens R. Br., 433.

X

Xanthochymus dulcis Roxb., 372.
Ximenia americana Linn., 50, 209, 423.
Xylocarpus carnulosus Zoll. & Mor., 307.
forstenii Miq., 307.
granatum Koen., 306.
moluccensis (Lam.) M. Roem., 307.
obovatus Juss., 306.
Xylophylla latifolia Linn., 209.
longifolia Linn., 209.
Xylophyllos ceramica Rumph., 208.

Yucca Rumph., 324. Zala asiatica Lour., 132. Zalacca Rumph., 115. blumeana Mart., 115. edulis Reinw., 114. Zanthoxylum aromaticum Willd., 289. glandulosum T. & B., 288. rumphianum Cham., 289. torvum F. Muell., 288. triphyllum Don, 291. Zea mays Linn., 84. Zerumbed album Rumph., 163. claviculatum Rumph., 162. frigidum Rumph., 163. giring Rumph., 163. majus Rumph., 164. manga Rumph., 163. nigrum Rumph., 164. Zeuxine amboinensis J. J. Sm., 169, 549. Zingiberaceae, 151. Zingiber amaricans Bl., 152. cassumunar Roxb., 152. gramineum Blume, 152. majus album Rumph., 151. marginatum Bl., 152. minus sive gramineum Rumph., 151. montanum Link, 152.

officinale Rosc., var. minor Val., 151. zerumbet (Linn.) Smith, 152.

zerumbet (L.) Smith., var. amaricans

 \mathbf{Y}

Val., 152.

Zizyphus jujuba Lam., 341.

littorea Teysm., 50, 209.

mauritiana Lam., 341.

soporifera Schultes, 209.

timoriensis DC., 342.

Zoopthalmum giganteum Prain, 277.

Zygia Boehm., 248.

Zygolepis rufescens Turcz., 50.

officinale Rosc., 151.



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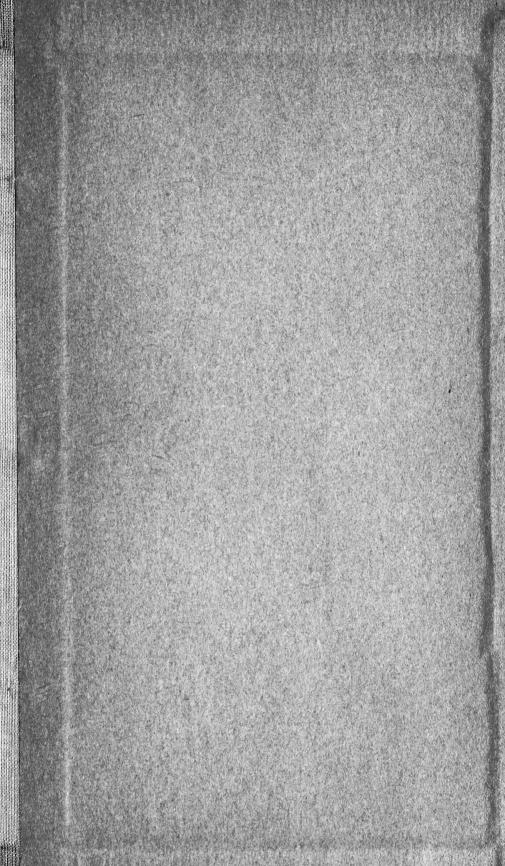
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